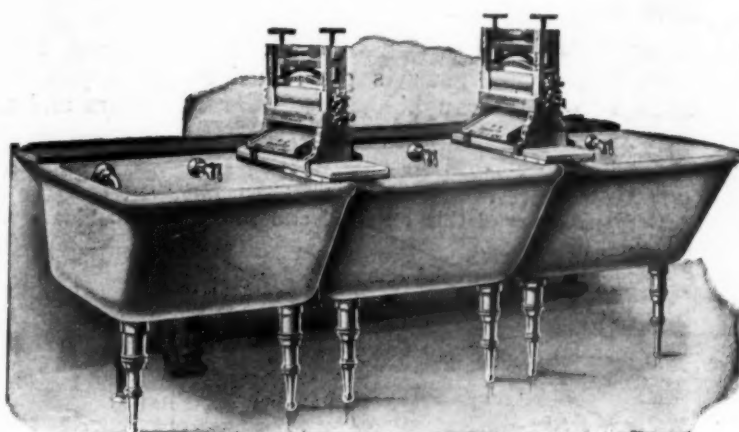


AMERICAN ARTISAN and Hardware Record

Vol. 79. No. 12.

620 SOUTH MICHIGAN AVENUE, CHICAGO, MARCH 20, 1920.

\$2.00 Per Year.



Wringer Display Stands

WE make several attractive styles of display stands for ANCHOR BRAND Clothes Wringers. You should have one in your store. Ask us about them, they help sell wringers.

Spring is a good time to feature this well known line of Clothes Wringers **ANCHOR BRAND CLOTHES WRINGERS**

THESE are the good guaranteed Clothes Wringers you should choose for your Spring business. Every one of our High Grade Five-Year and Three-Year Warranted Wringers bear the ANCHOR BRAND trade-mark together with one of our "Warranty Tags." In the event of any part proving defective within the warranty period, when used for family use only, the necessary parts will be replaced by us, free of charge.

All the important features of design and construction are combined in the ANCHOR BRAND Clothes Wringers. We were the first patentees and manufacturers of a satisfactory *Ball Bearing Wringer*; we introduced the *Safety Cog Wheel Shield*; we improved the rubber rolls so that they would contain the desired elasticity with the best wearing qualities.

These facts give assurance of your customers' complete satisfaction. The ANCHOR BRAND Clothes Wringers can be had in many types, sizes and finishes.

You can make good profits by selling your customers ANCHOR BRAND Clothes Wringers. Let us tell you more about them **now**.

Write for our complete catalog today.

LOVELL MANUFACTURING CO.

ERIE, PENNSYLVANIA

The Largest Manufacturers of CLOTHES WRINGERS in the world.

GLOBE

PIPELESS FURNACES

- Despite the fact that home building today is considered an extremely expensive proposition because of the high cost of materials, all present indications point to a home building boom this spring.
- This is the reason why. Many people who are now paying exorbitant rents for apartments figure that they may as well receive something more tangible for their money. Many of these people have already purchased suburban lots on which they will build small homes, bungalows or residences.
- All of these buildings which **WILL** be erected this spring and summer **MUST** have heating plants of some kind. You should get this good business and you **CAN**. **GLOBE PIPELESS FURNACES** will thoroughly satisfy your customers and net you a good profit.

Let us tell you more about **GLOBE PIPELESS FURNACES**, our effective sales co-operation and our National Advertising. Many other dealers have found this an ideal and profitable combination. *So will you.*

*Secure the agency for your territory now.
Write today for our illustrated catalog.*

Dependable

Economical

Serviceable

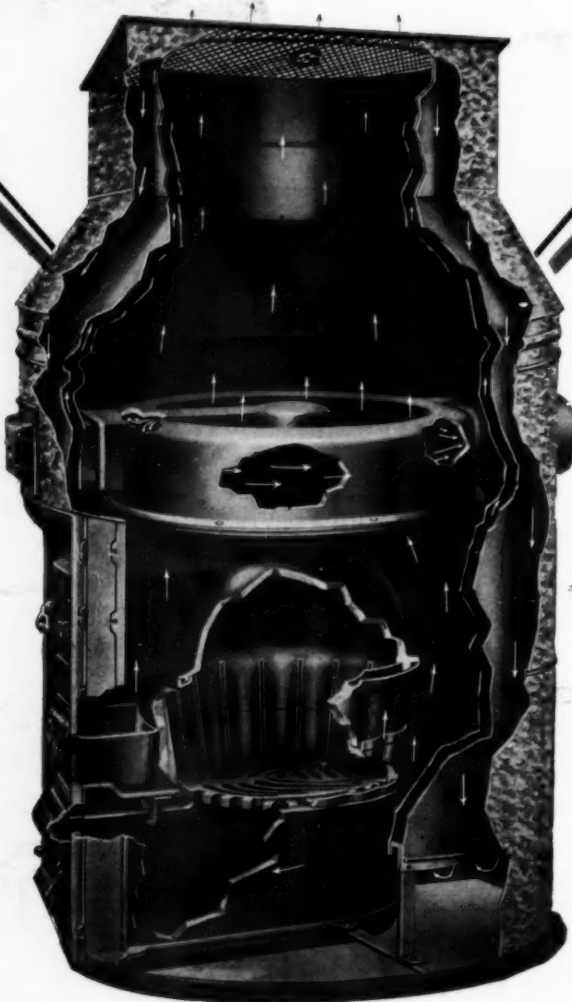
Efficient

Long Lived

Satisfactory

Practical

Profitable



GLOBE STOVE & RANGE COMPANY

"MASTER FURNACE BUILDERS"

KOKOMO, INDIANA

ESTABLISHED 1880
Representative of
The Hardware, Stove,
Sheet Metal, and Warm
Air Heating and Venti-
lating Interests
PUBLISHED EVERY SATURDAY

AMERICAN ARTISAN and Hardware Record

Address all communications and
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DANIEL STERN
Publisher and Proprietor
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Chicago, Illinois

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CHICAGO, MARCH 20, 1920.

\$2.00 Per Year.

STRONG SELLING ARGUMENTS for the hardware dealer are available in the bulletin of the Chicago Department of Health. These arguments are all the more convincing because they are free from the slightest suspicion of commercial self-interest. The retailer who handles garden tools and supplies can use the reasoning of the Health Department to good advantage in his advertising. Briefly summarized, the Health Department's appeal for more gardens is as follows:

It is very evident that there will be a greater need for back yard and vacant lot gardens in Chicago this year than there was at any time during the war period. This assertion is based on the extreme probability that the farmers of the middle west, and throughout the country for that matter, have practically decided to curtail production.

A careful reading of the agricultural journals discloses the fact that for months past the farmers through their organized bodies have been considering some such action. During the war the farmers, as a class, responded to the calls made upon them to produce bumper crops by increasing their acreage and this they did.

Then came the era of profiteering in foodstuffs of every kind. The farmers have noticed the tremendous difference in the prices they received as compared with those paid by the final consumer for all classes of farm produce. So they have asked why, in the face of scarcity of labor, the long hours which they must work, they should attempt to raise more grain and foodstuffs of every kind only to fill the pockets of the profiteer.

For several years now the people of Chicago have been pretty active in the city gardening movement. A tremendous impetus was given this movement by Mayor Thompson in 1918. Last year there were thousands of gardens within the city limits which raised a vast amount of foods, which otherwise would not have been available at all. This year, as has been pointed out, the need for gardens was never more urgent than now to help the people to meet the high cost of living.

Those who have had gardens know how much they help out in meeting the expenses of providing food for the family table. They know, too, something of their value from a health standpoint. They know that gardens are fine for the children who are old enough to help work them and that they pay big returns for the time, money and labor expended.

AN OVERSTRAINED CONDITION of credit and a continuance of the tendency toward speculative operations are prominent items in practically all reports from Federal Reserve districts, as summarized in the monthly review issued by the Federal Reserve Board. While the Federal Reserve agents in their reports as to business conditions and the outlook for trade forecast the continuance of active demand for products, the situation in some districts is such as to raise questions and to lead to predictions of possible reduction in business activity and in prosperity. There is in many sections of the country indication of some alteration in outlook and a disposition on the part of the customer to use more care and judgment in his purchases. No increase in labor unrest is observable, but in some districts a continuation of underproduction or limitation of production is encountered.

Wholesale trade conditions are reported prosperous almost through the country. In spite of exceeding high prices of building material, the intense shortage of accommodations is causing a great growth in building operations in many parts of the country.

Labor conditions are quite generally reported throughout the country as being in fairly stable condition. The most unfavorable aspect of the labor outlook is the tendency reported from various districts toward restriction of output. Even in those cases, however, where this tendency is noted, the opinion is occasionally expressed that the effect of the restrictive policy in injuring those who practice it is beginning to be better understood. Scarcity of labor is noted in many districts, particularly in the agricultural regions, and as a result reduction in the acreage of farms and the output in some manufacturing lines is foreseen. An especially acute situation in farm labor is reported from the Southwest.

In the Eastern manufacturing districts notable increases in the number of men employed and in the advance of factories toward capacity production have occurred. In some specialized industries, however, either strikes or shortage of raw material have led to restriction of output, although such interferences have not been excessive. Many plants which during the war were not able to bring more than a substantial percentage of their machinery into active operation have succeeded in getting much closer to total activity. It is noted, however, that even those plants which are running at full capacity are in some instances, unable to turn out as much as pre-war days.

Gardening Supplies

Federal Reserve Reports.

THE BORDER LINE between the farm and the city is becoming erased. Likewise the needs of the farmer are, in a measure, assuming the identical proportions of those of the city man if **Farm Trade Developing.** not surpassing them. No more is the farmer looked upon as separated from the other citizens of the country in industrial communities. In recent years the farmers' intelligence has been considerably raised. As a result, his desires and requirements have increased. People living on farms have more time to read than those residing in larger communities where the rush and whirl of life absorb all their interest and where there are a vast number of diversions. Farmers read and ponder over advertisements. They take interest in improvements. Always on the look-out for means and ways of bettering their equipment and stock, they are prospective customers, who, if convinced of the value of an article, will buy. The hardware requirements of the average farmer are without a doubt twice above that of a city dweller. As an example of the average development of the American farmer and the extent of his needs, herewith is given the tabulated result of a survey of a representative township recently published by the Iowa State College of Agriculture:

Forty per cent of all the farm homes have running water;

Thirty-three per cent have bath tubs;

Thirty-four per cent have indoor toilets;

Eleven per cent have electric lights;

Thirty-five per cent have gas lights;

Forty-eight per cent have power washing machines;

Twenty-six per cent have electric or gas irons;

Fifty-four per cent have carpet sweepers or vacuum cleaners;

Fifty per cent have warm air heaters, hot water systems or steam heat;

Ninety-three per cent have telephones;

Forty per cent have refrigerators;

Twenty per cent have gas cook stoves;

Thirty-three per cent have oil cook stoves;

Thirty-three per cent have sleeping porches;

Fifty-six per cent have pianos;

One hundred twenty-five of the homes have an average library of over one hundred volumes. Certainly this gives some indication of the immense market there is in equipping these farm homes throughout America.

The publications which the farmer reads are increasing. In all commercial circles the purchasing power of the farming communities is a topic of live interest. Because of his constant desire for improvement the farmer has increased his earning capacity. He derives more from his land and from his stocks. But the process of improvement on his part has not stopped. It will continue indefinitely. To the most vigorous, and persevering will come this business. Those who ignore the farm trade as unworthy of any unusual effort, are underestimating agricultural communities' purchasing power and are laboring under a misapprehension of the facts. Concerning the status of the farmer in relation to our national life Theodore Roosevelt declared:

"We were founded as a nation of farmers and in

spite of the great growth of our industrial life, it still remains true that our whole system rests upon the farm; that the welfare of the whole community depends upon the welfare of the farmer. The strengthening of country life is the strengthening of the nation."

That advertising is one of the best means of interesting the farmer in a product will be denied by no one. However, he will not respond to any fluctuating efforts to gain his business. Having leisure, he has time to think over a proposition with more thoroughness than can be credited to the city man. But the energy, time, and money spent in developing farm trade will result in a permanent source of profits.

THERE IS A limit beyond which the good salesman can not avail himself of his personality in selling goods. If an efficient dealer could speak to customers throughout the entire day, because of physical restrictions he could meet only a comparatively small number.

Selling Through Letters.

Then, the manager of a business can not afford to spend all his time selling wares. Other duties—probably of more basic importance—require his attention. Yet there is a remedy. Retailers do not take full advantage of familiarizing their community with the spirit of their store through letters. A periodical message written by the retail merchant and circularized would have preponderating effect in increasing the community's interest in his business. No special qualifications are necessary. In fact, the dealer should not seek to go outside of his own mind and thoughts to express himself. The object should be to reach those who do not come to the store. If some people do not know of your store's spirit and service, acquaint them with the personality of the business by mail. Speak to the prospective purchaser in the letter as you would were he beside you in the store. The method is not expensive. Yet it repays. As a means of advertising it is invaluable. The personally addressed letter has a far reaching force. It supplements only the individual conservation of its writer. Therefore the dealer should seek to put his own individual thoughts into his letters. Notice of sales, of receipt of a new line of a fresh supply of some generally needful article—all news of interest to the community concerning the business can be placed in the periodic letter. Enclosures can be put with the message, thereby making a single stamp do double work.

It will be found that to have a number of letters printed in typewritten form will be inexpensive. If taken up in the right spirit the work expended can be made to reap profits in good will and sales. Through his letters, the retail merchant becomes a living force in the community. He is heard of more frequently and therefore is kept in mind. That the letters sent out will be read is almost assured; for it is inherent in human nature to read letters individually addressed. Though the newspaper advertisement can not be belittled, it will not perform the function of a well written personal message. Furthermore, it must be remembered that to write such a letter, say once a month, will not take a great amount of any man's

time. Only one letter need be framed; the rest are set up in type.

To say that most merchants recognize the value of a method such as outlined in the foregoing is stating an undisputable fact. But it is that inertia born in all men that detains them from carrying out the dictates of the idea. Once they begin they wonder why it did not occur to them sooner to start the work, as much valuable time has been lost. Consider the proposition. Weigh the possibilities then get busy and compose your letter and send it out regularly with enclosures such as circulars and other bulletins.

RANDOM NOTES AND SKETCHES.

By Sidney Arnold.

Politeness is worth practicing not merely because it helps business, but also—and, perhaps, chiefly—because it enriches character and promotes happiness. Only a churl or a clodhopper thinks it belittles his importance or authority to be courteous to the person who serves him.

* * *

The right kind of advertising does not need any trickery to be effective, asserts my friend, George W. Diener of the G. W. Diener Manufacturing Company, Chicago, Illinois. It holds the customers it gains, unlike the sort of advertising exemplified in the following tale:

"Waiter," grumbled a customer, "I would like to know the meaning of this. Yesterday I was served with a portion of pudding twice the size of this."

"Indeed, sir," rejoined the waiter. "Where did you sit?"

"By the window," answered the customer.

"Oh, that accounts for it," said the waiter. "We always give people by the window large portions. It's an advertisement."

* * *

Many a fine thought is expressed in apparent jest, says my friend Allan J. Coleman, President of the Hardware Club of Chicago. Here is a sample which he offers:

"I used to think I possessed the artistic temperament—the sacred fire; but I was mistaken. I'm just one among the millions of common people," said a man at the Club one day.

"You have no right to say that. You have done some splendid things—things that you could not possibly have done if you had merely been one among the millions of common people," objected a friendly admirer.

"No, you're mistaken. I'm just an ordinary, everyday man. Why, my wife has lived with me for 11 years without ever once thinking of getting a divorce."

* * *

Written and spoken sounds are not always the same in meaning. Hence some ludicrous mistakes result, as in this story related by my friend Gus Engelhardt, hardware dealer of Chicago, Illinois:

"I declare!" shouted a bellboy in one of the big downtown hotels as he dashed into the lobby.

"I declare!" he shrieked again.

An irascible old gentleman glared at the boy.

"I declare!" the boy exclaimed in louder tones.

"Oh, you do, eh?" snorted the old fellow. "Well, why the deuce don't you?"

The bellboy cast a withering glance at him, gazed searchingly about the lobby and repeated:

"I declare!"

"Say," queried the old gentleman, collaring the boy, "what the dickens is wrong with you anyway? Are you going crazy?"

"Naw, I ain't goin' crazy," replied the brass buttoned one. "I got a telegram for 'em; that's all. Aw, look for yerself," he concluded as he shoved the yellow envelope under the old fellow's nose.

It was addressed "I. D. CLAIR."

"Well, I declare!" gasped the old man as he weakly sank into his seat.

* * *

There is an illustration which I found the other day in the address by Henry A. Moehlenpoh of the Federal Reserve Board delivered at the convention of the Texas State Bankers' Association. I like it immensely. It is a picture, vivid, strong, and appealing, of the tides lifting huge warships and frail canoes with the same force. Here is the passage from the address. It holds a lesson as well as a marvelous word-picture:

"I would like to do to and for you as I would like to be done by if I were in your place. The time has come for us to relate ourselves as citizens, not only to financial system, but to the country and to the world in terms of sacrifice and service—for you to put first things first. You may discover that this principle when once worked out will be not unlike the tides of the ocean. They come in with unfailing regularity and when they go out they take with them not only the great war vessels and merchantmen, but the little dory and canoe are lifted alike upon the bosom of the tide."

* * *

Prosaic men of medicine say that a man is as old as his arteries. To a certain extent they are right. But their statement needs to be modified by other factors. The truth is never contained in a single sentence, no matter how plausible or convincing the sentence may be. The fact of the matter is that a man is as old as his capacity for laughter. There may be a vital connection between the condition of the walls of the arteries and the suppleness of the muscles of the face which enter into the expression of merriment. However that may be, there is no denying that time has no terrors for joyous folk. This thought is pleasantly set forth in the following verses:

~Long Life and Laughter.

I know a man who is so old—it is his time to die—
And yet he lives and laughs and loves. This is the reason why:
He still believes a song is singing somewhere in the dawn,
And that the days to be are better than the ones a-gone.

He still believes the world is good, he brothers with the trees,
He hums an echo of the croon of all the honey bees;
He thinks the grass is just as green, the sky is just as blue
As ever any sky or grass on any day he knew.

He thinks a handclasp means as much as in the days of old,
He thinks a heart can brim with all the love that it can hold;
He still believes a smile is true and good words are sincere,
And that content comes to abide with them that have no fear.

AMERICAN ARTISAN

POWELL EVANS.

A man is the sum of the things which he thinks and performs. This truth is richly illustrated in the career of Powell Evans, president of Merchant and Evans Company, Philadelphia, Pennsylvania. He was born June 1, 1868, near Little Rock, in Marlboro County, South Carolina, the eldest son of Dr. James and Maria Antoinette (Powell) Evans. His early education was received at the private schools of Florence, South Carolina. In 1882 he won a scholarship at the Citadel (State) Military Academy of Charleston, which, however, on account of his early age and immature growth, the Governor refused to affirm. In 1884 he entered Hobart College, Geneva, New York, from which he graduated in 1888, third in his class, with the degree of Bachelor of Arts and with the award of Phi Beta Kappa. His studies there included special courses in mathematics and engineering. Mr. Evans is now a Trustee of Hobart College.

Immediately after graduation he secured a position with the Wickes Refrigerator Company, manufacturers of refrigerator cars and structures, and shortly thereafter became its branch manager in Buffalo, New York, and later in Philadelphia. In 1892 he severed his connection with this firm and entered the employ of William Wharton, Jr., and Company, Incorporated, and shortly thereafter became its assistant sales manager, in which position he was brought into close touch with the intensive development of electric railway transportation throughout the Eastern section of the country at that time. In 1894 he engaged independently in street railway, water power and electric light and power engineering in various enterprises in North Carolina, Virginia, and Maryland.

In 1898 he became identified with Merchant and Company, Incorporated, of Philadelphia, and in 1900 became its vice-president. Upon the death in 1904 of Clarke Merchant, founder of this extensive metal business, he financed its purchase from the estate and organized the Merchant and Evans Company, of which he has since been principal owner and president.

Mr. Evans is principal owner and president of the

Schuylkill Railway Company, which operates some forty miles of electric railway in Schuylkill County. He is also principal owner of the Schuylkill Electric Company, a related activity supplying electric light and power in a portion of the same community.

In 1905 he was largely instrumental in organizing the Globe Automatic Sprinkler Company of which he is now the largest stockholder and president.

For a number of years he has been a director of the Philadelphia Chamber of Commerce, and for the past three years one of its vice presidents. He is a director of the Tradesmen's National Bank and of the Commonwealth Title Insurance and Trust Company, both of Philadelphia.



In politics Mr. Evans is an Independent Republican. He has for the past ten years been closely associated with the so-called reform element of this party in Philadelphia. In 1915 he was active in organizing and became Chairman of the Citizens' Republican League and the next year organized the Hughes Alliance of Pennsylvania and was its chairman in support of the Presidential Campaign of the Honorable Charles E. Hughes. He was active in the work of the Philadelphia Charter Revision Committee of 1916-17 and was Chairman of the Good Government Committee of the Philadelphia Chamber of Commerce and a member of the Legislative Committee of the Committee of Seventy which

endeavored to secure the enactment of these remedial measures in the 1917 Legislature. He was a member, secretary and Chairman of the Publicity Committee of the Philadelphia Charter Committee of last year which finally secured the enactment of the new Charter for the City of Philadelphia and was active in the campaign which elected the Honorable J. Hampton Moore as Mayor of Philadelphia.

He is a member of Sigma Phi Fraternity, the Sons of the Revolution, the American Society of Mechanical Engineers and Society of Automotive Engineers. His clubs are the Rittenhouse, University, Racquet, Philadelphia Country, Merion Cricket, and Engineers' Club of New York. His friendship is highly prized by those who win it.

HALL OF FAME

WILLIAM GALLUN.

It is not a sensational or startling thing to say that William Gallun is fond of fishing. A few Puritans might be sufficiently stirred out of the languor of contemplating their self-righteousness to inquire whether or not he desecrates the Sabbath in pursuit of his favorite diversion. Otherwise, the statement would cause no ripple of excitement anywhere. Nevertheless, it reveals much to the followers of the ancient and delectable art of fishing. Even to the ragged urchin with his improvised rod and bent pin hook, it is, indeed, an art—an art which recognizes no distinction of persons. Its devotees are the world's true democrats. Freed from the heavily starched and highly polished linen of conventionality and garbed in more or less nondescript raiment, the fisherman foregathers with others of his kind. He asks and gives no bank references or any certificate of pedigree from his associates.

It is surprising how some men dwindle in importance when deprived of the *camouflage* of fashionable attire. Unless one possesses genuine qualities of manhood beneath the surface indications of his appearance, he will find himself as much out of harmony with the democracy of those who fish as the ex-kaiser would be out of harmony with a crowd of American marines in a reunion of veterans of Chateau Thierry.

William Gallun is popular among people who go fishing. That means that he has passed all the tests—that he does not need to cultivate impressiveness or any other mannerism in order to gain a footing among his fellow men or to impress people with his real worth. He is genuine. He is sincere. The forthrightness of his nature makes him scorn pomp and display as means of winning recognition.

There is little doubt that he acquired much of the fundamental democracy of thought and habit from the circumstances of his life, which has been spent in the sheet metal trade. Whatever the faults and imperfections of that craft may be, they do not include snobbery or narrowmindedness. Tinsmiths never feel abashed in the presence of bankers or other gentry of high degree. They are not troubled by any sense

of inferiority based on wealth or social exclusiveness. In other words, they realize that the privilege of American citizenship is a greater distinction than any title of nobility. William Gallun was born in an environment where these ideas and principles were uppermost.

He first saw the light of day, May 25, 1877, in Milwaukee, Wisconsin. His education was received in the public schools of his native city. He went to work for his father, Otto Gallun, after leaving school, and thus learned the tinner's trade under a thoroughly competent master of the craft. His father took a keen pleasure in teaching him every branch of the work, and—most important of all—in training him to appreciate the delights of careful and intelligent workmanship.

He remained in the employ of his father for seven years. During that time he acquired a knowledge not only of the mechanical side of the business but also of its administrative phases as well. He became versed in the purchase of supplies, the handling of contracts, estimates, designing, architectural specifications and requirements and other features of the sheet metal trade.

Eventually, he became sole owner of the business at 966 Kinnickinnic Avenue, Milwaukee, Wisconsin. Among the many lessons which his father taught him and the wisdom of which he was quick to perceive was the lesson of organization—a lesson unmistakably given by every form of life from the smallest group of cells constituting a bee to the complex array of organs making up the human body. Accordingly, he took a deep interest and active part in the work of the Wisconsin Sheet Metal Contractors' Association. At the convention of that association last year he was unanimously elected to serve as its treasurer. So well did he perform the tasks assigned to him that he was again elected Treasurer of the Wisconsin Sheet Metal Contractors' Association at this year's convention, held March 17, 1920, in Hotel Wisconsin, Milwaukee, Wisconsin.

He is also a prominent member of the Turnverein of Milwaukee, Wisconsin, and active in its affairs.



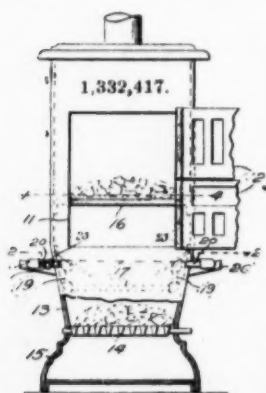
UP TO THE MINUTE NEWS SIFTINGS

JOHN D. GREEN IS MADE GENERAL MANAGER OF EASTERN COMPANY OF STOVE MAKERS.

Regret at the loss of a genial associate and staunch comrade is tempered by rejoicing at the advancement of John D. Green, Secretary Detroit Stove Works, Detroit, Michigan, to a more important and lucrative position in the trade. His many friends in Michigan and neighboring states are sorry to have him leave Detroit. But they are glad that he has gone away to assume the position of General Manager and Vice-President of Rathbone Sard and Company, stove manufacturers, of Albany, New York. The years of service which he spent in the Detroit Stove Works as secretary have been fruitful in numerous ways. He has earned the good will of everyone connected with the industry. His knowledge of the stove business and its related industry, the warm air heating business, is extensive and practical. As President of the Midland Club, to which office he was recently re-elected, he has been active in promoting the interests of the warm air heating trade. He has already departed for the East and will soon move his family to Albany, New York. That he will prosper in his new position is the firm conviction of everyone who knows him.

STOVE OR FURNACE IS PATENTED.

United States patent rights have been granted to Robert G. Speer, St. Louis, Missouri, under number 1,332,417, for a stove or furnace described as follows:



In a stove or furnace, a fire-pot, a pair of grates arranged therein and disposed one above the other, the upper one of which grates is cut away on one side so as to provide an opening to permit flames from the burning fuel on the lower grate to pass upwardly over the fuel on the upper grate, there being openings formed through the wall of the fire-pot above the lower grate, a tube arranged within the fire-pot above the lower grate, which tube is adapted to contain liquid hydro-carbon, tubular connections leading from the ends of said tube outwardly through the wall of the fire-pot and thence to points directly opposite the openings in the fire-pot wall, jet caps on the ends of said tubular connections, which jet caps are directed toward the openings in the wall of the fire-pot, and deflecting members arranged within the stove or furnace above the openings in the wall of the fire-pot,

said deflecting members being inclined so as to deflect jets from the jet caps downwardly onto the lower one of the grates.

MAKES PREPARATIONS FOR HOLDING AN "INCREASED PRODUCTION" CONVENTION NEXT MONTH.

Seeing in increased production a means of restoring normal business and price conditions, the Chamber of Commerce of the United States, it was announced today, will make its eighth annual meeting, to be held at Atlantic City, New Jersey, April 27 to 29, 1920, an "Increased Production Convention."

This subject is considered of such importance that in working out a program for the meeting every topic will be considered from this point of view. Lack of production, it is pointed out, is one of the chief causes of the high cost of living, which can not be reduced until more goods are put on the market. The present is a seller's and not a buyer's market. Prices have been forced up by competitive bidding. This in turn has made necessary unusual wage increases, with a still further rise in manufacturing and production costs.

The general subject of increased production has been divided up in the program for the convention into sub-subjects. The first to be taken up will be the government in relation to production. Under this heading will be considered anti-trust legislation and taxation. Business of every kind is keenly interested at this time in the situation with respect to taxation, especially in the subject of excess profits taxes, against which there has been general complaint.

The second general subject to be taken up will be transportation in relation to production. This will include both land and water transportation. One of the chief causes of lack of production just now, it has been pointed out, is the general shortage of railroad equipment. One authority estimates that the country is short at least 200,000 box cars and all lines of industry have felt the shortage.

One general session of the convention will be given over to agriculture in relation to production. Here will be presented for discussion the part of the government, the farmer and the business man in agriculture. Secretary of Agriculture Meredith will speak for the government.

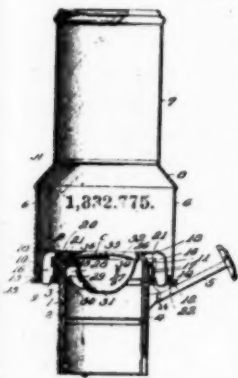
Another important general subject will be the relation of labor to production. This will be approached from both sides, the employe's viewpoint being presented by a representative of the American Federation of Labor and the employer's by a business man.

Besides the general sessions there will be held group meetings, divided as along the great divisions of in-

dustry. In these meetings the subject of increased production, as in the general meetings, will be the main topic discussed.

PROCURES PATENT FOR OIL STOVE.

Arthur Stockstrom, St. Louis, Missouri, assignor to American Stove Company, St. Louis, Missouri, a Corporation of New Jersey, has secured United States patent rights, under number 1,332,775, for an oil stove described herewith:



A blue flame burner of the type described, comprising an inner and an outer wick tube, an air distributor within the inner wick tube at its upper portion, a chimney having its lower end surrounding the outer wick tube and an outer air distributor located between the chimney and the outer wick tube, the outer air distributor consisting of only two members, viz., an inner vertical annular flange surrounding but apart from the outer wick tube, and an outer deflector having its lower end at the lower end of the chimney, and its upper end curved inward over the upper end of said flange and the wick tubes and apart from them.

vertical annular flange surrounding but apart from the outer wick tube, and an outer deflector having its lower end at the lower end of the chimney, and its upper end curved inward over the upper end of said flange and the wick tubes and apart from them.

LUSTROUS TRIMMINGS ADD TO GOOD APPEARANCE OF STOVE.

Stove trimmings are not generally things of beauty. Yet the good appearance of a stove adds attractiveness to the room in which it is placed. The Fanner Manufacturing Company, Cleveland, Ohio, makes stove trimmings which are said to be of lustrous beauty. Every detail of the articles made by this company is formed so that it will be strong and attractive-appearing at the same time. Among the stove trimmings which can be promptly furnished are: Pokers, lifters, turnkeys, handles, scrapers, shakers, corners, brackets, rings, edges, strips, towel bars, chaplets, malleable castings, and stars. Service in delivery is another feature in the transactions of The Fanner Manufacturing Company, Cleveland, Ohio, besides the giving of high quality in its products. Further information pertaining to stove trimmings write to this company.

ITS PATTERNS HAVE DISTINCTIVENESS.

Through its long experience The Cleveland Castings Pattern Company, Cleveland, Ohio, has perfected its manufacturing facilities to be able to produce patterns which meet with the satisfaction of the most exacting. In the selection of the material used, the greatest care is exercised to preclude the possibility of a flaw appearing in the finished article. This company makes patterns of merit for stoves and warm air heaters. To one who examines the products of this company, the high degree of skill of the workmanship employed is immediately evident. Every detail of the patterns is well formed. Distinctive work is made possible by the mechanical perfection of the machinery used. Pat-

terns of all dimensions and kinds can be made. Write to The Cleveland Castings Pattern Company, Cleveland, Ohio, for details on pattern specifications.

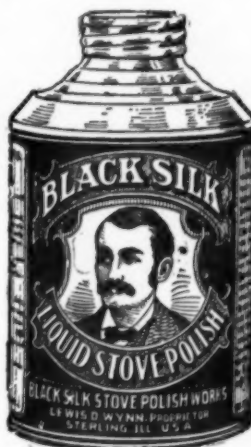
PROPERTY IS THE FRUIT OF LABOR.

Now is a good time to repeat what Abraham Lincoln said, to tell it to one's employes or fellow-workers, and to help put it into practice. Lincoln said:

"Property is the fruit of labor; property is desirable; is a positive good in the world. That some should be rich shows that others may become rich, and hence is just encouragement to industry and enterprise. Let not him who is houseless pull down the house of another, but let him work diligently and build one for himself, thus by example assuring that his own shall be safe from violence when built."

CAREFULLY SELECTS INGREDIENTS.

By carefully selecting and combining the ingredients used in manufacturing Black Silk Stove Polish, both liquid and paste, the Black Silk Stove Works, Sterling, Illinois, is able to make a polishing compound which will produce a lasting shine when applied. It is, also, economical. There is no waste



Black Silk Liquid Stove Polish, Made by the Black Silk Stove Polish Works, Sterling, Illinois.

attendant upon the use of Black Silk Stove Polish in either of the forms it is made. No hard rubbing is required to bring out a lustrous shine on stoves. A deep black polish which will not easily wear off can be produced by little effort. Stove dealers can make their goods attractive by using Black Silk Stove Polish. Because of its high quality, it does not need much work to make the stove neat-looking by employing this polish. Black Silk Stove Polish does not crystallize and leave dust on the stove when it dries or when the article upon which it has been applied is vigorously polished. When placed on the shelf in the store for a long time, it will not dry out and become useless.

Black Silk Stove Polish is said to be as good the day it is sold as when the can was first closed. Black Silk Liquid Stove Polish, a can of which is shown in the accompanying illustration, is always ready for use. It requires no mixing. The can is handy for the housewife and has gained wide favor. For manufacturers' and dealers' use the makers of Black Silk Stove Polish market this polish in large cans. No matter what the size of the receptacle in which Black Silk Stove Polish is sold, the quality is guaranteed to be always the same. It is said customers who once try this polish recognize its economical qualities and purchase no other kind. In addition to the stove polish described, The Black Silk Stove Works, Sterling, Illinois, prepares iron enamel, metal polish, and other similar specialties of high merit. Write to this company for information relative to prices, etc.

THE WEEK'S HARDWARE RECORD

Of Interest to Manufacturer, Jobber and Retailer

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing western hardware and metal prices corrected weekly. You will find these on pages 54 to 59 inclusive.

BECOMES ASSISTANT TO SECRETARY OF THE WISCONSIN RETAIL HARDWARE ASSOCIATION.

Being well equipped for the position by long experience in the trade and having the right kind of ability for the work, B. Christianson of Sioux Falls, South Dakota, became Assistant to Secretary P. J. Jacobs of the Wisconsin Retail Hardware Association, Stevens Point, Wisconsin, March 15, 1920, with every likelihood of success.

Mr. Christianson was a retail hardware dealer in Minnesota and very active in the Minnesota Retail Hardware Association before going to Sioux City, South Dakota, where for several years he was connected with the Larson Hardware Company.

MANUFACTURERS BEGIN CAMPAIGN TO EDUCATE PUBLIC IN FAVOR OF AMERICAN CUTLERY.

A national advertising campaign has been planned by cutlery manufacturers of the United States for the purpose of educating the public with regard to the merits and advantages of American cutlery. In furtherance of the campaign an American Cutlery Bureau of Information has been organized under the management of Charles H. Paine, editor of *The American Cutler*, who says: "Now that the war is over the need for educating the buying public is obvious and the manufacturers virtually endorsed a plan proposed to spend a sum which goes well into six figures in using the advertising pages of the popular magazines, the farm and the trade press to secure publicity along the lines referred to and familiarize the public with the trade-mark which will be coined for the purpose.

"Meanwhile there is a certain amount of German goods coming into the country. Someone holds no scruples as to the patriotic or ethical merits of the proposition but is accepting the foreign goods in the hope of palming them off on the unsuspecting public, riding the goods in on the general argument that we must again resume trade relations with Germany if we ever expect her to pay her debts."

"The legitimate manufacturers of this country should not be misunderstood when they stand out for their rights. It is not the nursing of a bitter grievance against the German people which prompts their attitude. If Germany has certain products to offer us which we are physically unable to make in America

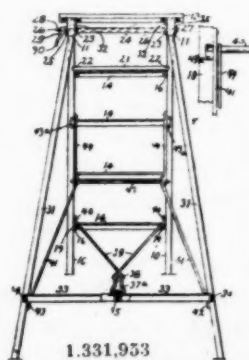
by all means let us import them. There is no inclination to cut her throat commercially but surely there should be less inclination to cut our own throats, and if we have in this country the facilities for making certain goods and by the operation thereof assure our labor forces of steady work and a good income it is little short of insane to go scouting for such goods abroad."

BUYS LAND FOR A NEW FACTORY.

Ground has been purchased and plans drawn for a new brick factory building by the Chatsworth Manufacturing Company, Chatsworth, Illinois. The plans call for a one-story structure, 170 feet long and 50 feet wide, with truss roof and ample window lighting. The Chatsworth Manufacturing Company was founded last fall by A. J. Stone who invented the "Ideal" metal smoker made by the Chatsworth Manufacturing Company. He incorporated the company but it was November 1st before they began operations. Then the fuel restrictions and trouble in securing metal delayed operations very much, and they have not been able to fill half the orders received. Their metal chicken coops and hog house ventilators have also met with instant favor. They plan to make various other metal products. This week they received an order for several thousand snow shovels to be delivered before next winter and have orders enough now on hand to keep a large force at work for several months.

PATENTS ANTI-SLIPPING ATTACHMENT AND BRACE FOR LADDERS.

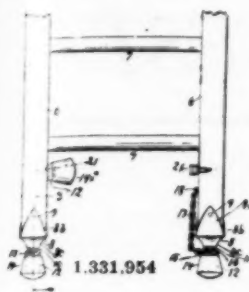
Under numbers 1,331,953 and 1,331,954, United States patent rights have been obtained by Charles J. Brown, River Falls, Wisconsin, assignor to Brown Safety Ladder Company, River Falls, Wisconsin, a Corporation of Wisconsin, for a stepladder with automatic spreading and bracing means, and an anti-slipping attachment for ladders, described in the following paragraphs:



rear legs, a thumb-nut at one end of said rod, a spac-

In a stepladder, resilient metallic sockets supporting the uppermost step or cap of the ladder, the rails of the ladder forming front legs and having their upper ends secured in said sockets, and the upper ends of the rear legs of the ladder being pivotally secured in the sockets, a headed rod extending through the sockets and forming the pivots for the

ing tube upon the rod and filling between the two sockets, so as to resist them when the nut is applied to tighten the sockets against the rear legs.



lower end.

The combination with the rails of a ladder, of sockets secured on the lower ends thereof and having each a downwardly extending spur with screw threads about its base, a metal bushing threaded upon said threads and a rubber cap secured about the bushings and covering its

HE IS A REGULAR HUMAN BEING.

Here is a regular he-man.

The phrase may lack dignity, but it certainly tells the story.

It means a thousand things for which there are no authorized words in our dictionaries.

It signifies a fellow who is on the square, who shakes hands with you with a grip which makes your



W. H. Fitch, President and General Manager of Richards-Wilcox Manufacturing Company, Aurora, Illinois.

blood tingle, who looks you in the eye with nothing to conceal, who has no tricks up his sleeve to beat you out of your share of life, and whom you wouldn't be afraid to meet on a lonely road in the dark.

This he-man is W. H. Fitch, President and General Manager of the Richards-Wilcox Manufacturing Company, Aurora, Illinois. It is a picture of the

man himself without desks, filing cabinets, and other office paraphernalia—just as he is in reality.

The photograph was taken last fall when he was on a two weeks' fishing trip into the Northern woods of Canada. It shows him chopping wood for the camp fire.

Men of his type humanize industry.

The chief objection to doing business with a slot machine is that you can never warm up to it. Always it is the same—unresponsive to emotion, cold, metallic. Some corporations produce a like effect upon their customers. People buy from them without ever becoming friendly with them—buy from them only because they don't know where to find an organization of real folks handling the same commodities.

There is nothing mechanical about the service of the Richards-Wilcox Manufacturing Company. It's human, courteous, good-natured, and friendly—from the president down to the office boy.

SHOULD ENCOURAGE THE PURCHASE OF LARGE PACKAGES AS AN ECONOMICAL STEP.

Complaints are frequent throughout the retail trade that customers are compelled to buy merchandise in units that are too small. In numerous instances this complaint is justified. Several products are put up in packages that are little more than toy models. As one customer phrased it, "I'm obliged to buy goods in homeopathic doses that I would like to get in quantities."

Some State laws oblige retailers to sell certain things by the pound. Also the high prices recently prevailing made the large units seem dear. It has always been easier for manufacturers to get distribution on small sizes. Even where all sizes are available, dealers will often stock only the small ones so as to keep down investment and also because they figure that a low price unit meets with less sales resistance.

But the necessity for this condition of affairs no longer exists. People should be given every opportunity to buy things in the unit that is most suited to their needs. This is the thrifty way to purchase. In planning many sales and advertising projects this fact should be borne in mind.

This does not imply that the small unit should be abandoned. There is no objection to the small package as such. It is a great convenience to people who do not want a large quantity. It prevents waste because it enables the small user to get the quantity that he can economically consume.

The value of the small package is emphasized when introducing a new product. Many advertising successes have been built on it. But after it has been introduced some people will find it more economical to buy large quantities. One excellent plan to encourage this is to have a prominent notice on the small package, telling users that the article is also put up in large units and that many will find it to their advantage to buy these big sizes.

Both small and large units should be available. An article is not well distributed until people are able to get the size they prefer.

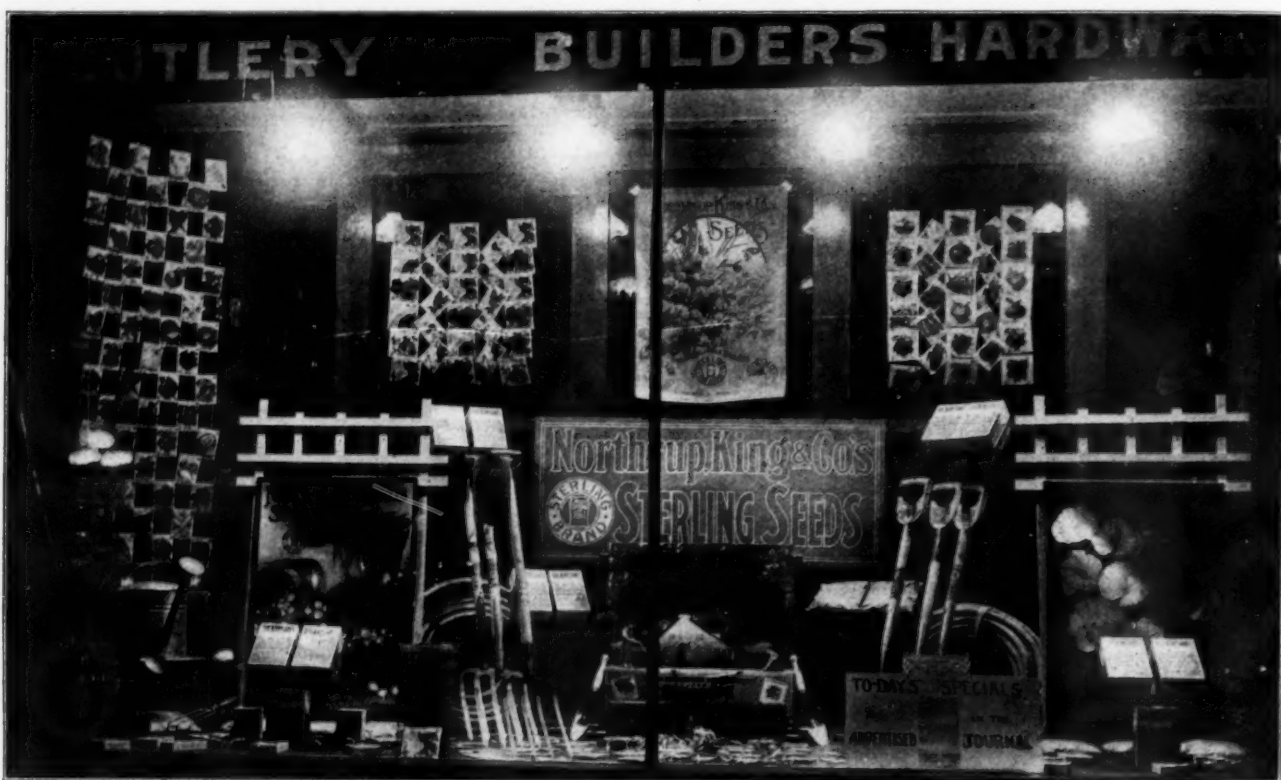
EXHIBITS IN AMERICAN ARTISAN WINDOW DISPLAY CONTEST

WINDOW DISPLAY OF GARDEN TOOLS AND SEEDS IS PRODUCTIVE OF PROFITABLE SALES.

Here is a window display which tells a story. It speaks a language which is as plain as words out of a first reader book. There is no mistaking its meaning. To the man or woman who has a patch of ground at his or her disposal, it talks cabbages, turnips, lettuce, tomatoes, string beans, carrots, parsley, strawberries, currants, verdant lawns, zinnias, rose bushes, poppies, carnations, lilies of the valley, pan-

pur, still intrigues our imagination after the lapse of eight hundred years.

No one is so prosaic that a garden of vegetables does not suggest pleasures of some sort—the exercise in the open, the limbering up of neglected muscles, the glow of action after a day's confinement in office or shop. Then for the thrifty folk there is the appeal of money saved by raising some of the edibles required for the family table. To all of these varying and divergent points of view, there is suggestion and persuasion in this window display of garden tools and seeds, arranged by E. A. Saur, 1410 Yale



Window Display of Garden Tools and Seeds, Arranged by E. A. Saur, 1410 Yale Place, Minneapolis, Minnesota Awarded Honorable Mention in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition.

sies, asters—all these and more according to taste and opportunity. Few human beings are so constituted that they are unresponsive to the appeal of a garden of their own making. Motives stirred into action by such a window display may vary from the purely æsthetic to the merely utilitarian, but the selling power of the display is equally potent for every phase of incentive. The lover of flowers will find in the things exhibited the means for gratifying his desire. No matter how limited may be the bit of earth which he may cultivate, a garden of flowers is a delight. He may dig and spade and water the growing plants with a pleasure second only to the joy of watching the seed develop into delicate buds and wonderful blossoms. And if he lets his fancy take part in the work, he may easily become heir to that old Persian poet who, from his rose garden at Naishha-

Place, Minneapolis, Minnesota, which was awarded Honorable Mention in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition.

This window display was productive of profitable sales of hose, seeds, garden tools, lawn fence, grass seed, and sprinkling cans. At the same time that the display was on exhibit, E. A. Saur was running an advertisement in the local newspapers covering the articles shown in the window. He took pains to direct attention in the newspaper advertisement to his window display, just as in the window display he had a placard calling the notice of the observer to the advertisement in the newspaper. By thus connecting his window display with his printed publicity he intensified its selling power. The results which he reports from the window exhibit are ample proof of his good judgment, of his wisdom in planning and study-

ing this display before arranging it, and of the positive profits which are sure to come to the store which utilizes window displays as part of the merchandising equipment.

GIVES HISTORY AND DEVELOPMENT OF SHARPENING STONES.

Reprinted from "Chan-Farco Beacon," House Organ of Chandler and Farquhar Company, Boston, Massachusetts.

The sharpening-stone has been known and used for untold centuries. The first cutting-tools of primitive man were made by chipping flint or other hard stones into shape for immediate use. It is quite certain that during the latter part of the Stone Age the art of grinding was developing slowly, but was not being used so much for any technical advantage there might be as for the sake of beauty and symmetry of shape.

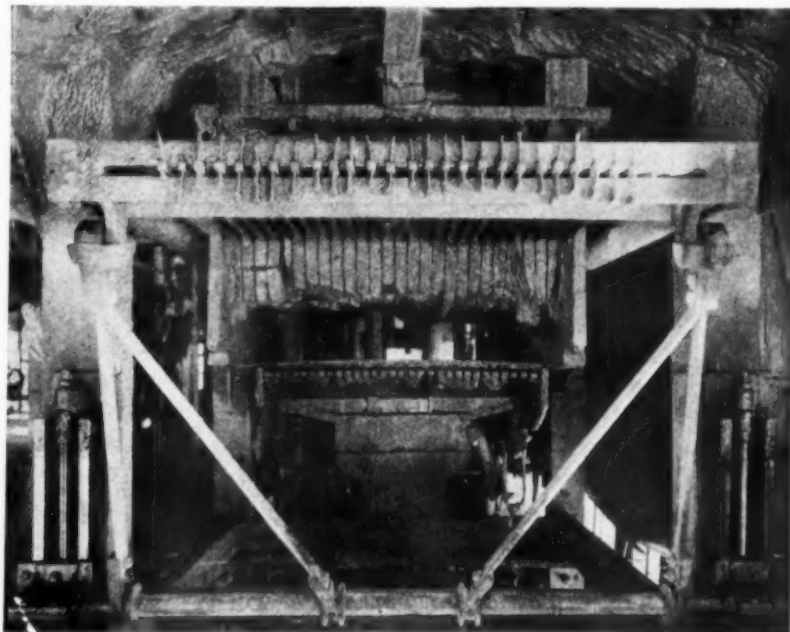
Among the relics coming from all parts of the world showing the life, manners, and customs of prehistoric races, sharpening-stones are often in evidence. The first stones were merely outcroppings of sandstone or other rock possessing abrading qualities. In those early days it was doubtless customary for primitive man to make frequent pilgrimages to the source of supply, for the sake of keeping his cutting-tools in good condition. Then came the desire to have these stones near at hand, that they might be available for immediate use, and large pieces were broken off and carried or dragged away to considerable distances.

As has been proved by the discovery of the stones themselves, these original sharpening-stones were, when compared with present-day standards, huge affairs, measuring three or more feet in length, twelve to eighteen inches wide, and of varying thicknesses. Their great weight held them stationary against the rubbing of axes, arrow and spear heads, swords, etc. In the Stone Age doubtless these stones were used more as polishers than as actual edge producers, but with the advent of the use of metals, and with the corresponding improvement in tools and implements of warfare, the sharpening-stone gradually came into its own.

The first mention of sharpening-stones in the United States is made by one Thomas Merton, who came to Massachusetts with the first settler, and in letters back home dwells much upon the resources of the new country in whetstones. Inasmuch as the stones which were discovered by him near what is now Wollaston, Massachusetts, were of very inferior quality, no commercial development was ever made of the product.

About 1815 the first quarrying operations were performed in Arkansas, where about four hundred pounds of what is now known as Washita rock were taken out. The Arkansas stone did not come into general use until several years afterward, being considered a barber's stone and too high priced for common use. The Washita stone took its name from the Ouachita River.

About 1821 Person Noyes, a farmer living in northern New Hampshire, while chopping in the woods, picked up a piece of stone upon which he attempted to whet his axe. The stone gave such good results that he got out a few rough pieces from a near-by ledge and broke them into rough scythe-stone shape, but made no attempt to grind them smooth. This product was sold locally, but the industry did not develop further at that time on account of his death. Later his wife married Isaac Pike, and through him the business of the Pike Manufacturing Company was established in the year 1823. The first quarry was located on the shores of Indian Pond, and the product became known as Indian Pond scythestones, a name



Sawing stone at Littleton factory. Blocks of stone are built up in a bed of plaster, and the saws, plain bands of steel without teeth, are mechanically drawn back and forth, sand and water being constantly supplied. Sand grains being much coarser than the grains of the stone, gradually scratch the stone away. The sawing process is very slow, the cutting rate being about one and a half inches in twenty-four hours.

which is familiar today in all parts of the world where agricultural pursuits are carried on.

In 1825 a fine sandstone formation was located in the vicinity of what is now known as French Lick, Indiana. This product was first manufactured in the little town of Hindostan, from which the name of the product was derived.

Sharpening-stones today are divided into two distinct classes, known as Natural and Artificial stones. Natural stones include those which are taken directly from the earth, and which, without undergoing any change of structure of crystallization, are manufactured into shapes convenient for mechanical purposes. Artificial stones, on the other hand, consist of certain basic materials which in the course of manufacture undergo some chemical change whereby an entirely new material is created; after which it is crushed, graded, moulded into desired shapes, and baked under intense heat in kilns or ovens.

The most important stones of the Natural division in common use today are the Arkansas and Washita oilstones of Arkansas, the New Hampshire and Vermont scythestones, the Hindostan stone of Indiana, the Queer Creek stone of Ohio, the Turkey stone from

Asia Minor, the Belgian razor hone from Belgium, and the German water hone from Germany. Most of these will be dismissed with brief mention. The Hindostan and Queer Creek stones are of sandstone formation and are manufactured chiefly to meet the demand for an inexpensive stone. The Turkey stone, at one time used almost universally by carpenters and mechanics, is fast going out of the market, due to the fact that it is almost impossible to obtain good stones, and also because it has been superseded by other products of much superior quality. The Belgium hone, found in the Ardennes Mountains in Belgium, is very popular among barbers on account of the remarkably fine and soft texture of its grit.

Arkansas stone is purely an American product, found only in the Ozark Mountains of Arkansas. Originally used by the American Indian for his crude cutting-implements, its fame has spread all over the world until it is now universally used for certain classes of work. Genuine Arkansas stone is composed of millions of pure silica crystals, microscopic in size, of the greatest hardness and sharpness, silica being among the hardest of known minerals. So perfectly crystallized is this stone that it is nearly sixteen times harder to cut than marble—a feature of great importance, as it enables the hardest steel tools with fine points or blades to be sharpened without grooving the stone.

Arkansas stones are prepared for commercial purposes in two grades, Hard and Soft. Hard Arkansas is composed of 99½ per cent pure silica, and its sharpening qualities are due to small, sharp-pointed grains or crystals, hexagonal in shape, which are much harder than steel, and will therefore cut away and sharpen steel tools. It is used universally by surgeons, histologists, jewelers, dentists, watchmakers, cutlers, engravers, and in all other similar professions or trades. Soft Arkansas is not quite so fine grained and hard, but it cuts faster and is better adapted for sharpening the tools of wood-carvers, file-makers, pattern-makers, and all workers in hardwood. It is also used extensively by sheep-shearers on the great ranches in western United States, Australia, South America, and other sheep-raising countries.

Washita stone is another product of the Ozark Mountains, and is quite similar to the Arkansas stone, being composed of nearly pure silica, but it is much more porous. It is found in various grades from perfectly crystallized and porous grit to vitreous flint and hard sandstone. The best selections are made from very porous crystals. The brand known as Lily White Washita is acknowledged by experts as the best Natural stone for sharpening carpenters' and general woodworkers' tools. It is preferred by many mechanics for efficient tool-sharpening, and when properly selected gives extreme satisfaction, although it does not cut as rapidly as some of the Artificial stones.

With the introduction of modern tool steels came the demand for faster-cutting sharpening-stones. As far back as 1830 attempts had been made to produce artificial oilstones. Various composition stones of emery, garnet, or silica had been placed upon the market, but these, owing to their tendency to glaze and stop cutting, or to wear unevenly and even to crumble

when wet, did not prove very satisfactory. When, therefore, a new oilstone under the name "India" was introduced in the early 90s, and concerning which several startling claims were made, mechanics were inclined to be skeptical. It was claimed for the India oilstone that it would cut the hardest known steel, the kind on which an ordinary file slips; that it would stand up to its work under the most adverse conditions without losing its shape; that it could be graded to suit particular work it was called upon to perform; and, most important of all, that it could be produced month after month, year after year, with no variation in quality. The years have verified these claims, and today the India oilstone is used almost universally in machine-shops and all other places where a stone is required which must be not only fast cutting, but which must stand up under constant daily wear and tear practically indefinitely without losing its shape.

The India oilstone is manufactured by the Norton Company of Worcester, Massachusetts, the world's largest manufacturer of grinding-wheels. The sale of the India oilstone, however, since it first came onto the market, has been handled by the Pike Manufacturing Company, and it is known and advertised all over the world as Pike India. The first India oilstones were made from corundum imported from India, and from this it is easy to see how this remarkable oilstone derived its name. The difficulty in obtaining India corundum in sufficient quantity and of uniform quality caused the manufacturer to begin chemical experiments in an effort to find a substance possessing its many virtues and lacking some of its faults. The result of this study was the discovery of an artificial aluminum oxide, commercially known as Alundum.

Alundum is a remarkable reproduction of the natural mineral corundum. It is made by fusing bauxite in the intense heat of the electric furnace. Bauxite is a soft earth resembling light yellow clay and chemically is the purest form of aluminum oxide found in nature. The fact that the ruby and sapphire are of the same chemical composition as the soft, yellow, clay-like bauxite suggested the line of experiments which resulted in the production of Alundum, a hard, sharp, abrasive material. The advantages of Alundum over every other known abrasive lie in its peculiar combination of hardness, sharpness, and temper. India oilstones are made from Alundum after it has been crushed and graded into the size of grain most suitable for oilstones. These Alundum grains are all uniform—coarse, medium, or fine, as desired. India oilstones are filled with oil in the course of manufacture, which gives them remarkable freedom from glazing. It is due to this economical feature that it is unnecessary to soak a new India stone in oil for days, as is usually the case with other sharpening-stones.

Few people realize the important place the sharpening-stone fills in the advancement of human endeavor, nor the many and various ways in which it is used. In a general way it is realized that the carpenter needs an oilstone, the farmer a scythestone, and the barber a razor hone. Beyond this, however, little consideration is ever given to the thousands of different manufacturing operations in which the sharpening-stone is an actual necessity, nor to the thousands of articles

in everyday use whose production practically every stage of their development is dependent upon the selection of the right sharpening-stone.

MAKES A VARIED LINE OF WIRE.

Wire for almost every conceivable purpose is manufactured by the American Steel and Wire Company, Chicago, Illinois. American ignition wires and cables for automobiles, motor boats and airplanes, products of this company, undergo special processes. According to the manufacturers, some of the characteristics which differentiate this wire from the vast variety manufactured are, a soft drawn, high-conductivity copper conductor composed of many small tinned or untinned wires stranded together, insuring minimum voltage drop and maximum flexibility. A plain glazed rubber finish, or with either single or double covering of glazed cotton closely braided over a winding of varnished cambric tape, then impregnated with a special compound which renders the covering both oil proof and waterproof and resists the destructive action of heat. Besides the ignition wires and cables the American Steel and Wire Company are the producers of a comprehensive list of wire products. Among the many kinds of wire manufactured by this company are, pipe organ wire, piano wire, bale-ties, barbed wire, concrete reinforcement, springs, netting, wire fences, auto-towing cables, round and odd-shape wires for manufacturing, etc. Dealers should write to the American Steel and Wire Company, Chicago, Illinois, for detailed information and interesting circulars concerning their products.

ADVERTISING STORE POLICY IN SLOGAN FORM AIDS IN FAMILIARIZING COMMUNITY WITH DEALER.

Where a hardware retailer has started a store in a vicinity which previously purchased its supplies in some outlying district, the dealer must carefully analyze his neighborhood and its needs. The hardware dealer, in starting business, has sized up the needs of the community, and the possibility of doing business; if he does not think there was a particular niche for him, he would not locate where he does.

His policy should be, therefore, to give the people of his vicinity a hardware store without having to make a trip to the nearest large town. Or perhaps the hardware store already in town is dirty and out of date. If so, the new hardware dealer finds it effective to play up the newness of his stock, the brightness of his store, the promptness and courtesy of his store service.

Every hardware dealer has a motive back of his business in addition to the ulterior motive of making money; and it is worth while for him to play up this motive. He has a store policy, even if he never stops to analyze the situation and discover what his policy is. Unconsciously perhaps, he is nevertheless working in line with a set policy.

The hardware merchant should crystallize his policy and embody it in the form of a slogan. In all his advertising copy his chosen slogan should be given a

prominent place. The slogan should not be made too long or too clumsy. Now and then slogans are encountered which are, in fact, not slogans but sentences—almost paragraphs. Two, three or at most four or five words will do the trick better than a lengthy phrase. "Make it short" is the watchword for the slogan-builder.

An effective way of both procuring a slogan and introducing it in a community is to offer a prize for the best one suggested. Invite the public to visit the store, look over the stock, and find out from the clerks and from actual observation what the store is. Offer a prize to the person who expresses that policy in the most catchy phrase. The same thing has been done by many a town or city in the search for a civic slogan; and the hardware dealer who takes up the slogan idea need offer only a comparatively small prize—say five dollars or even an attractive article of about that value—to draw a crowd of competitors. Have the judging done by outside men—that is, men outside the store.

The slogan should be selected with an eye to permanency; and if it embodies a distinct store policy—such as quality goods, or comprehensive stock—the merchant has no alternative but to live up to it to the letter.

OBITUARY.

John Miller.

After an illness of six weeks, John Miller, senior member of the firm of John Miller and Son, St. Nazianz, Wisconsin, passed away at his home in that town, March 4, 1920. He was 60 years of age and had been in the hardware business 28 years. By diligence, careful buying, cheerful service, and patient good nature he built up a flourishing trade in hardware, farm implements, gasoline engines, vehicles, flour and feed. His customers as well as his friends mourn his departure from this life.

PRESENTED BY BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

The Bureau of Foreign and Domestic Commerce, through its Special Agents, Consular Officers and Commercial Attachés, is receiving information of opportunities to sell hardware and kindred lines in several foreign countries. Names and locations will be supplied on request to the Bureau in Washington or its District Offices. Such requests should be made on separate sheets for each opportunity, stating the number as given herewith:

32234.—An import firm in India desires to secure an agency for the sale of brass and copper sheets. Quotations should be given c. i. f. port in India. Terms, 30 days sight through India bank. Reference.

32236.—A manufacturer in Costa Rica desires to purchase material of all kinds for the manufacture of trunks and valises, hand bags, etc., all of good quality, wire for springs, and springs of all kinds. Quotations should be given c. i. f. Port Limon or Punta Arenas. Payment, one-third in cash upon receipt of documents, one-third on 30 days, and one-third in 60 days, with interest. Correspondence should be in Spanish. Reference.

32239.—A merchant in France desires to purchase household goods, especially aluminum ware, kitchen ware, enamel ware, and iron. Correspondence should be in French.

32237.—A commercial agency firm in Belgium desires to purchase and secure an agency for the sale of agricultural machinery, reapers, harvesters, rakers, etc. Reference.

32241.—A general agency firm in South Africa desires to secure the representation of manufacturers and shippers of motor cycles and agricultural machinery. Reference.

32254.—A firm of general merchants in Egypt desires to purchase 50 firemen's axes. Quotations should be given c. i. f. Egyptian port. Payment, cash. Correspondence may be in English.

32261.—A firm of importers in New Zealand desires to secure an agency for the sale of cartridges, aluminum ware, motor cars, farm tractors, and motor trucks. Quotations should be given c. i. f. main New Zealand ports. Payment through bank in New York. References.

32265.—An agency is desired by a merchant in Italy for the sale of white metal and silver-plated tableware, especially forks, knives, and spoons, and cutlery in general, and small tools for industrial purposes. Quotations should be given c. i. f. Genoa. Correspondence should be in Italian or French. Reference.

32266.—A commercial agent in Argentina desires to secure an agency for the sale of iron, steel, tin plate, galvanized pipes, etc. Quotations should be given c. i. f. Argentina. Payment by sight draft. Correspondence may be in English. References.

32268.—A firm in Turkey desires to secure large quantities of various products, hardware, etc. References.

32273.—A merchant firm in Italy desires to purchase cutlery, such as shears, scissors, knives, razors, and razor blades; and hardware. Quotations should be given c. i. f. Genoa or Leghorn. Payment, cash against documents. Correspondence may be in English. References.

32275.—An importer in Argentina desires to secure agencies for the sale of general hardware. Correspondence may be in English. References.

32285.—A dealer in boots and shoes and carriage and motor accessories in India desires to purchase samples and receive quotations f. o. b. New York on carriage hardware. Reference.

32286.—A military governor in the city of Syria desires to receive catalogues, price lists, and discounts on American hand and steam plows, harrows, drills, mowers, reapers, rakes, thrashing machines, cleaning mills, etc., with the intention of purchasing for the local government. Information as to how to order by telegraph should be forwarded.

32289.—A company of importers in The Netherlands desires to purchase and secure an agency for everything that can be imported to Holland and the Dutch East Indies. Correspondence is invited from manufacturers of every class. Quotations should be given c. i. f. Amsterdam. Payment, cash against documents. References.

32291.—Representation is desired by a commercial agent in Danzig for the sale of general merchandise on a commission basis, particularly interested in building hardware and material, vehicles for country use, and lubricants. Quotations should be given c. i. f. Danzig. Correspondence may be in German. Reference.

32294.—An agency is desired by a man in Switzerland for the sale of general merchandise. Quotations should be given c. i. f. destination. Payment, cash.

COMING CONVENTIONS.

Illinois Sheet Metal Contractors' Association, Bloomington, Illinois, April 14 and 15, 1920. Frank I. Eynatten, Secretary, Peoria, Illinois.

National Warm Air Heating and Ventilating Association, Cleveland Hotel, Cleveland, Ohio, April 21, 1920. Allen Williams, Secretary, Columbia Building, Columbus, Ohio.

Southeastern Retail Hardware and Implement Association, embracing Alabama, Florida, Tennessee and Georgia State Retail Hardware Associations, Atlanta, Georgia, May 4, 5, 6, and 7, 1920. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta Georgia.

Louisiana Retail Hardware and Implement Association, Alexandria, Louisiana, May 10 and 11, 1920. R. D. Nibert, Secretary-Treasurer, Bunkie, Louisiana.

Stove Founders' National Defense Association, Boston, Massachusetts, May 11, 1920. R. W. Sloan, Secretary, 826 Connell Building, Scranton, Pennsylvania.

Hardware Association of the Carolinas, Imperial Hotel, Greenville, South Carolina, May 11, 12, 13, and 14, 1920. T. W. Dixon, Secretary, Charlotte, North Carolina.

Southern Hardware Jobbers' Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, May 11, 12, 13, and 14, 1920. John Donnan, Secretary, Richmond, Virginia.

American Hardware Manufacturers' Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, May 11, 12, 13, and 14, 1920. F. D. Mitchell, Secretary, 4106 Woolworth Building, New York City.

Old Guard Southern Hardware Salesmen's Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, May 12, 1920. R. P. Boyd, Secretary, Knoxville, Tennessee.

National Association of Stove Manufacturers, Boston, Massachusetts, May 12 and 13, 1920. Robert S. Wood, Secretary, National State Bank Building, Troy, New York.

National Association of Sheet Metal Contractors, Peoria.

Illinois, June 8, 9 and 10, 1920. Edwin L. Seabrook, Secretary, 261 South Fourth Street, Philadelphia, Pennsylvania.

Ohio State Sheet Contractors' Association, Toledo, Ohio, July 20, 21, and 22, 1920.

RETAIL HARDWARE DOING.

Arkansas.

J. H. Samuels of Chismville has bought the hardware stock, buildings and home of J. W. Biggerstaff at Branch.

Kansas.

A new hardware firm has been organized in Junction City, C. A. Kenney, J. H. Blumenthal and George Biegert being the promoters. Within a few weeks the store will be opened to the public in the old postoffice room, corner of Sixth and Washington Streets.

J. H. Vogel has sold his hardware and implement stock at Stuttgart.

The Commons Hardware Company has purchased the building just south of the Altoona State Bank at Altoona from S. E. Wilson and will have it arranged into a fine hardware and furniture store.

The Star Grain and Lumber Company of Wellsville has bought the Sam Cloon hardware stock at LeLoup and will move it to the company's yards at LeLoup. M. R. Williams, the present manager, will be in charge.

New Mexico.

The old bridge near Bar, which has been a notorious drinking and gambling resort for many years, will soon become a part of a large building to be occupied by the Ludwig William Hardware Store at East Las Vegas.

Missouri.

Fire of undetermined origin destroyed the establishment of the Hawkins Hardware Company and an adjacent butcher shop at Bunceton last week. The loss was estimated at \$50,000.

J. P. Klumpp has moved a portion of his hardware stock at Rich Hill into his new quarters in the Spraker Building, on Park Avenue.

R. J. Mansur has bought the interest of his partner, C. W. Van Trump, in the Braymer Hardware Company at Braymer and has become sole owner of that concern.

Everett Callison, formerly a stockholder in the hardware store at Barnett has sold his property and moved to Eldon.

Pelsue and Herring, of the People's Hardware Company, are conducting a closing out sale of their stock of goods at Paris.

Ohio.

J. C. Park, hardware dealer at Norwalk, has formed a partnership with his son, J. M. Park, under the firm name of J. C. Park and Son.

Oklahoma.

The Jackson-Varner Hardware Company has sold their stock and building at Coalgate to the Coalgate Furniture and Hardware Company. The main stockholders are Abe Zweigel of Atoka, and I. Engelberg of Coalgate, now with the Zweigel Hardware Company. Mr. Engelberg will be the new manager.

Business relations covering a period of fourteen years were severed recently when C. K. Norman disposed of his interest in the Frederick Hardware Company at Frederick to his partners, E. J. Cowen, and R. E. Young, who will continue the business under the old name.

W. B. Crabs has purchased the Carson Hardware Store at Perkins.

W. H. Findly has outgrown his uptown hardware business at Nash and it is understood that he has purchased some suburban business property and will establish a new store at Jet.

Texas.

Blackard Hardware Company has started leveling up a forty foot extension to their northside building at Snyder. J. W. Hancock and B. Edmonds with spade and wheel barrow are doing the work.

Fire of unknown origin last week destroyed the Orenbaun Hardware Store at Hillsboro. The damage amounted to several thousand dollars.

Conrado Cloetta and Ezequiel Cavazos have purchased the Brownsville Hardware Store at Brownsville from Mrs. C. H. More. The business will be conducted under the same name and at the same quarters it now occupies on the first floor of the Travelers Hotel Building. The new management will take over the business on March 15th.

The Whitten-Galt Hardware Company of Bogota is now ready for business. Mr. W. H. Whitten is in charge as manager.

Burton Hardware Company has been chartered with a capital of \$20,000 at Crockett by A. B. Burton, S. E. Smith and Dan McConnell.

Wisconsin.

Kelleher and Breit have sold the hardware business at Lodi to Charles E. Smith of Ableman, who has taken into partnership I. H. Baillies, also of Ableman. The new firm will be known as the Smith and Baillies Hardware Company.

ADVERTISING CRITICISM AND COMMENT

Helpful Hints for the Advertisement Writer

The old-time novels were long and sometimes covered three or may be four volumes. But today, the

rush of business prohibits the reading, even in the longest leisure, any works of that length. Hence we have the short-story with its crispy expression of the plot and the characters of the tale. To unusually lengthy advertisements can be applied the objection placed upon

advertisement appeared looking over a page—if interested in hardware—will immediately notice this small announcement. Other than to attract the prospective hardware customer does not seem the purpose of this small advertisement. It is by accomplishing what he sets out to do that we judge the effectiveness of a person's methods. By arresting the attention of prospective hardware customers by means of this small advertisement the Strong Hardware Company gains its aim.

* * *

Words are mental pictures of the objects they name. In an advertisement an illustration conveys a more impressive picture than could the words alone. Knowledge is required, however, to arrange both the reading matter and the illustration in the most advantageous manner. To gain this information a study of the advertisements which appear in the daily papers and in other periodicals is advisable. Though simple in both text and illustration, the advertisement of the Neff Hardware Company, 1018-20 Market



SLEDS

Easy Steering
light and strong
\$1.25 to \$2.50

C. Morgan's Sons
11-13 W. MARKET ST.
HARDWARE

long novels—people have not time to read them. Especially, when an announcement appears in a newspaper must it be short, for the majority of newspaper readers have no leisure in which slowly to pick out obscure statements. The good advertisement must be direct and to the point. C. Morgan's Sons, 11-13 West Market Street, Wilkes-Barre, Pennsylvania, realize this. Hence the brevity of their advertisement reproduced herewith from the *Wilkes-Barre Times Leader*, Wilkes-Barre, Pennsylvania. The original copy was the same size as the illustration shown herewith. This advertisement tells its story in six words with a statement of prices. No one word is wasted nor could the elimination of a single word be done without injury to the entire advertisement. The illustration at the top with the brief statement following is meaningful.

* * *

The matter appearing in the small space of the advertisement of the Strong Hardware Company,

Hardware

STRONG HARDWARE CO.
Wholesale and Retail
Builders' Hardware, Tires,
Tubes and Auto Accessories.
205-207 Main St. Burlington,
Vt. Phone 1320.

Burlington, Vermont, depicted herewith, taken from the *Burlington Daily News*, is well arranged. The name is

mentioned first. This may be called an advantage in this particular case. There is no single item featured—the space would not permit it. The main thing is the hardware store itself. Then, of course, a list of some of the goods it sells is the proper method. A departure from the general run of small advertisements of the type of the one depicted herewith may be noted in the word "hardware" being extended from the border. The reader of the paper in which this



Ice Skates

REMNANTS OF STOCK.

CLUB PATTERN.

BEST MAKES.

Size from 8½ to 12 inches.

Lot One—Selling regularly from \$1.50 **\$1.00**
to \$2.00—going at.....

Lot Two—Selling regularly from \$2.50 **\$2.00**
to \$5.00—going at.....

NEFF HARDWARE CO.

"The Store Ahead"

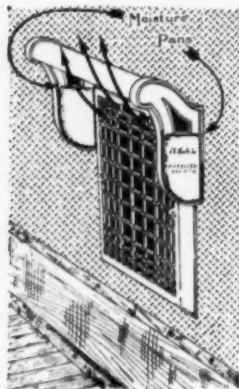
1018-20 Market Street

Street, Wheeling, West Virginia, reproduced herewith from the *Wheeling West Virginia Register*, Wheeling, West Virginia, is to the point. Informing the reader in few words about the various kinds of skates in stock, the advertiser proceeds to set down the prices—an advantageous arrangement, indeed. Most stores have a motto. If not they should get one. It is a valuable aid in keeping a prominent characteristic of the business in the public's mind. As is the case in the reproduction herewith, the motto should always appear in the advertising copy. Summing up, this advertisement is effective because of the sparing use of words, the stating of prices, and because of the neat illustration properly placed.

HEATING AND VENTILATING

KEEPS WALLS AND DRAPERIES CLEAN.

In spite of the precaution taken by all warm air heater manufacturers, some dust finds its way into the air diffused by a warm air heater. Consequently,



Neal's Register Shield,
Made by the Hall-Neal
Furnace Company,
Indianapolis, Indiana.

after long service, the wall surrounding a warm air register will become streaked. Most of the air being concentrated at the point from where it is circulated, it will, naturally, deposit most of the particles it carries near the register. For the protection of the walls and drapery, the Hall-Neal Furnace Company, 137-39 West Washington Street, Indianapolis, Indiana, manufactures the Neal's Register Shield, depicted herewith. The overhanging ledge contains a pocket which catches the dust which the air

carries. This pocket can be easily cleaned. Not only does the projection collect the particles carried in the air, but it guides the circulation of the air so that it more efficiently warms the house. Two moisture pans, one on each end, supply the air which comes up through the register with humidity. Thereby the warmed air is rendered more healthful and has a greater capacity for carrying and holding heat. The bad effect of dry air upon the nose, throat and lungs, and upon the furniture in the house is removed by the added precaution of the water pans in the Neal's Register Shield, declare the manufacturers. This register shield is set on the wall and is of sufficient weight to remain where placed. However, it can be removed at will. Neal's Register Shields are made in two styles, one for floor registers and the other for side wall registers. Being strong in build and neatly finished in aluminum bronze, they present an attractive appearance. Complete details such as prices, etc., can be procured from the Hall-Neal Furnace Company, 137-39 West Washington Street, Indianapolis, Indiana.

If promises were not so easy to make it is beyond dispute that they would not be broken with the facility that needs no lubrication.

MAKES USE OF THE SURPLUS HEAT.

Whoever has observed modern methods of heating will have taken notice of at least one thing—the wastage of heat in the majority of houses. Either people overheat or they underheat. Both conditions are to be avoided. Proper distribution of the warmth

generated by a stove or heating plant will do much to prevent the wasting of heat. Instead of allowing the heat to rise and seep out of the cracks around the windows and doors, if a method was employed efficiently to utilize the excess warmth produced, money could be saved. One of the methods of conserving heat which has gained commendation is that of em-



Independent Adjustable Smoke Pipe Register, Made by the
Independent Register Manufacturing Company,
Cleveland, Ohio.

ploying an Independent Adjustable Smoke Pipe Register, shown herewith, manufactured by the Independent Register Manufacturing Company, Cleveland, Ohio, by means of which the surplus heat given off by the smoke pipe can be put to good usage. The sheet metal box on this smoke pipe register adjusts from seven to twelve inches. The floor grating is black and the ceiling register is white. Openings large enough to admit the projection of either six or seven inch smoke pipes are provided in Independent Adjustable Smoke Pipe Register. When once installed this register will firmly adhere to the floor and ceiling. The heat given off from the smoke pipe circulates through the grating and heats the rooms on the upper floor. It does not take unusual mechanical knowledge to see the heat-saving qualities of the device shown in the accompanying illustration. For further particulars write to the Independent Register Manufacturing Company, 707 Frankfort Avenue, Cleveland, Ohio.

GIVES RESULTS OF RECENT WORK IN WARM AIR HEATER RESEARCH AT UNIVERSITY OF ILLINOIS.

Under a cooperative agreement with the National Warm Air Heating and Ventilating Association the University of Illinois, Urbana, Illinois, is carrying on valuable research work in warm air heating systems. The present testing equipment of the Illinois University for this work under the supervision of A. C. Willard, Professor of Heating and Ventilation, consists of the following:

(1) *Main Plant.* This plant consists of a complete

is 132 degrees Fahrenheit. Below the center of the pipe, the air temperatures also fall off rapidly to 130 degrees Fahrenheit at a distance 0.01 in. inside of bottom of pipe, while the metal surface here is at a temperature of 116 degrees Fahrenheit. The temperature curve for the asbestos covered pipe is similar, but while its maximum is 178 degrees Fahrenheit at 2 inch below top of pipe or 3.5 degrees Fahrenheit less than in a bright tin leader at the same position, the metal surface at top and bottom of leader is nearly 9 degrees Fahrenheit less at the top and 6 degrees Fahrenheit less at the bottom than the metal surface of the uncovered leader. *The asbestos paper covered pipe is losing heat more rapidly than the bright tin leader pipe.*

It therefore becomes a nice question to determine the heat content of the air at any given section and compare it with the heat content at some other section. This problem is still further complicated by the fact that a velocity traverse at this same section with a Pitot tube and micromanometer shows a somewhat similar variation in uniformity of flow across the section. The true mass temperature is then the summation of the products of the weights of air at each concentric equal area by the mean temperature at that concentric area divided by the total weight of air flowing.

So long as the temperature traverse curve at one section has the same shape as at another section, and the velocity traverse curves are similar to each other, differences in temperature and heat content are quite correctly obtained if the thermocouples are located at similar points as indicated by the temperature curves at the two sections.

Heat Loss from Covered and Uncovered Leaders. Reference has already been made to the fact that covering a bright tin leader with a single layer of asbestos paper apparently increases the heat loss from the leader. This appears to be due to the higher coefficient of radiation of asbestos paper as compared with a polished metal surface, and also to the increased surface area of the asbestos covering. This at once

mission plant supplied with low-pressure steam has been set up by Mr. Day and a few of the more interesting results are given in Table 1. In each case, a number of duplicate runs of at least 10 hours' duration have been made. In all tests reported the drums are of the same size and show no appreciable collection of air. Five drums are run at one time and No. 1 drum is always run as a control.

An attempt has been made to connect the data tabulated in Table 1 with the temperature loss found to occur in the case of the air flowing in the 10 inch leader for which the temperature traverse curves have been given. If we assume this loss in temperature is equivalent to the heat given off from the surface of the leader, which of course is undoubtedly true, we can calculate coefficients of emissivity for the bright tin and also for the asbestos-covered tin, using metal surface temperatures as read by thermocouples. These calculated coefficients based on a 10 foot run of leader for conditions shown in curves give values of 1.34 British thermal units for bare tin and 2.36 British thermal units for asbestos covered tin, similar to conditions No. 1 and No. 2, respectively, in Table 1.

The Problem of Air Velocity Measurement. There are two possible methods of determining the amount of air actually flowing in through the inlet and out through the leaders and stacks of a warm air furnace heating plant.

The first, and most obvious method, would be to attempt to measure the velocities directly, using a Pitot tube and a sensitive gage. This has been attempted and a very sensitive and accurate gage reading to 0.0001 inch of alcohol, has been developed by F. G. Wahlen, research graduate assistant. When it is remembered that the actual velocities range from as low as 2 feet to a maximum of seldom over 5 feet per second in these systems, it will be apparent that no ordinary differential gage will be of the least value in making direct measurements. Moreover, since a painstaking traverse is always necessary, the above scheme fails absolutely when applied to an extensive plant where many readings must be taken simultaneously. It is, however, of great value in studying single leader and stack systems.

The second method which may be used is to employ a simple "field" instrument which may be used quickly, is simple in construction and easily replaced. Such an instrument must, of course, be accurately calibrated and frequently checked; and as already indicated, this is the method which has been in use in this investigation from the start. It is the unanimous opinion of the men on the staff that this method is the only workable one, and that its only limitation is the inaccuracy of the Pitot tube or orifice used in its calibration. This gage was found absolutely essential in this calibration work. In test 1-A, the weight of air entering inlet per minute was 60.15 pounds and the sum of the weights of air leaving ten outlet-register faces in the same time was 59.75 pounds, or a discrepancy of 0.65 per cent. In test A-4 the results are not as good, since the weights in and out fail to check by 64.31 — 60.30 = 4.01 pounds or a discrepancy of 6.6 per cent. This discrepancy can be cut down one-half by assuming the true weight is the mean of the inlet and outlet

| Description of Drum | | Wt Steam Condensed in 10 Hrs. | Coef* of Emissivity By Pitot |
|---------------------|---|-------------------------------------|------------------------------------|
| 1 | Bright IC Tin 1 Leader Section | 11.63 | 1.40 |
| 2 | Same as N°1 but covered with one sheet 10 Lb Asbestos Paper | 17.80 | 2.30 |
| 3 | Same as N°2 but Painted with Gray Enamel | 18.14 | 2.32 |
| 4 | Same as N°1 but Painted with Gray Enamel, as in N°3 case. | 18.88 | 2.40 |
| 5 | Black Iron N°28 US Gage | 18.29 | 2.25 |
| 6 | Galvanized Iron N°28 Gage | 11.72 | 1.55 |
| 7 | Same as N°1 but Covered with 3 Ply Air-cell Asbestos Paper | 5.86 | .70 |
| 8 | Same as N°1, with $\frac{1}{2}$ " Air Space Made by double Wall of Tin. | 6.32 | .78 |

*Coef based on temp difference Steam to Air

Table No. 1. Relative Heat Losses from Thin Sheet Metal Pipes When Covered and Uncovered.

brings up the special problem of relative values of insulation methods in this particular field where thin bright tin pipe are used. In order to secure some corroborative data along this line, a special heat trans-

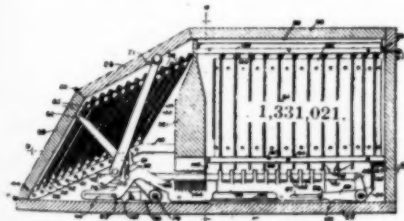
weights. We have not only done this, but are going to make a painstaking attempt to get still greater accuracy in the calibration of our anemometers. In other words, we are going to attempt to make a fundamental measurement of air that is more accurate than can be made by either Pitot tube or orifice, which methods we have found do not check each other when placed in the same line by from 5 to 10 per cent. It is quite out of place, however, to discuss this new scheme here.

Significant Conclusions.

1. The successful testing of a warm air furnace is so tied up with the testing of the furnace heating system as a whole, that to attempt to test the furnace without the plant is of little or no value, if rating or capacity data as well as thermal efficiency and economic performance data are desired.
2. No furnace testing data have any real value until the investigator can demonstrate that his methods of air measurement are fundamentally correct, and that the weight of air entering the furnace measured at the inlet temperature is equal to the aggregate weight of air leaving the furnace measured at the various outlet temperatures.
3. Warm-air furnace testing also involves unusually complete and accurate methods for measuring air temperatures, where radiation and stream line effects must always be corrected for in getting this temperature data. Most absurd results may be obtained if this is not done.
4. Furnace test procedure as to method of handling the fire and computation of results is of secondary importance and should be worked out to accord as nearly as possible with the steam heating boiler code.
5. A warm-air furnace test is a question of true air-velocity and true air-temperature measurement and nothing else, as all other problems become insignificant when compared with these two.

PATENTS CREDIT ACCOUNT REGISTER.

United States patent rights have been obtained by Haakon A. Martin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio, under number 1,331,021, for a credit cash register described in the following:



group, and devices whereby the sections of the other group control the actuation of the said operating mechanism.

PAY YOURSELF SALARY FOR WORKING.

The salary a man should pay himself should not be confused with the net profits which every retailer should aim to obtain over and above the costs of doing

business, says John C. Kirkwood. The proprietor's salary should be regarded in the same way as the salaries or wages of employees—a charge on the business.

The amount of the salary which the proprietor should draw ought at least to be equal to his own legitimate personal requirements and those of his family, and living expenses ought to be limited to the amount of the salary. But beyond this sum collected from the business weekly or monthly—actually withdrawn from it—the retailer should aim to make a net profit—a profit over and above all expenses.

WILL GIVE ECONOMICAL SERVICE.

Steadily the pipeless warm air heater gains in prestige as a dependable heating plant. Reliable installers deserve much of the credit for the increase of this



The Great Northern Pipeless Warm Air Heater, Made by the Wells Furnace Company, St. Louis, Missouri.

line of business. A good pipeless warm air heater if properly installed will give satisfaction. Of course, first of all must be determined the heat giving qualities and durability of the pipeless warm air heater. Should the heating plant be lacking in certain qualities which are necessary for the production, economically, of a large amount of warmed air, no amount of skill in installation will remedy it. Therefore, dealers should select their pipeless warm air heaters with care. The Great Northern Pipeless

Warm Air Heater, illustrated herewith, manufactured by the Wells Furnace and Supply Company, 1522 Olive Street, St. Louis, Missouri, is made throughout to give a large amount of healthful, warmed air, for the amount of money expended. Being strongly built, this pipeless warm air heater will endure an unusually long time. All the compartments are large and roomy and insure the efficient burning of the fuel and the proper distribution of the heat. The fire pot is made to resist heat. Being gas and dust tight throughout, no leakage will be experienced when a Great Northern Pipeless Warm Air Heater is installed, declare the manufacturers. The water pan is large. Thereby adequate humidity is given the warmed air before it circulates through the house. The heat retaining properties of air are increased by augmenting the amount of vapor. Also, its healthfulness is added to. According to the manufacturers, a long list of satisfied users and dealers give weight to the arguments presented. For literature on the pipeless warm air heater illustrated herewith write to the Wells Furnace and Supply Company, 1522 Olive Street, St. Louis, Missouri.

"There is no better ballast for keeping the mind steady on its keel and saving it from all risk of crankiness, than business."—Lowell.

PRACTICAL HELPS FOR THE TINSMITH

HOOD DESIGNS.

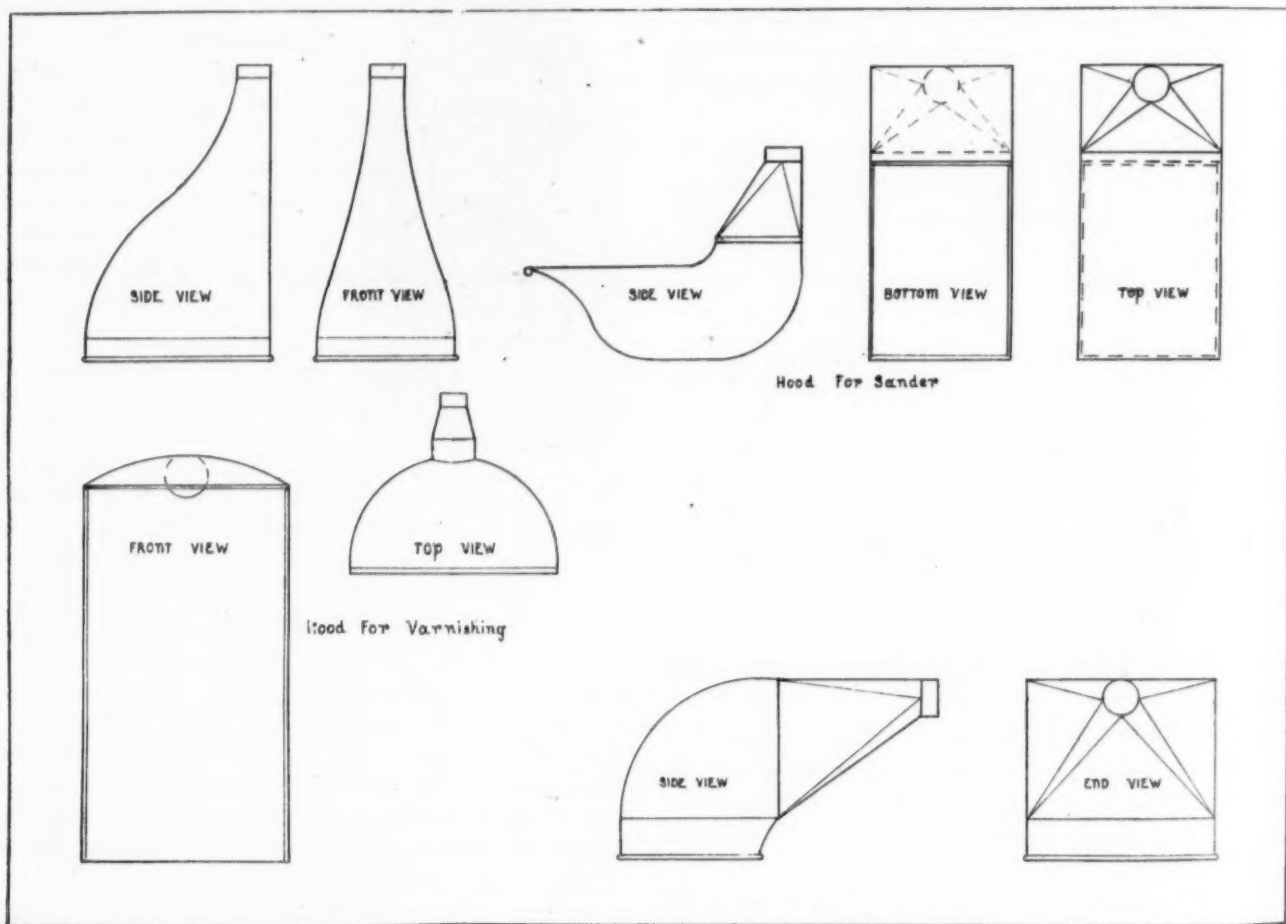
By O. W. KOTHE.

In this drawing we show a few types of hoods used in the chair factory described in a previous issue. Paint and varnish hoods require a design of their own, there being a difference in principle from the wood working hoods. The wood working hoods are made to follow the direct flow of the shavings from the knives and saws, while varnish hoods are mere canopies, some made deep, others shallow. The deep

chines, and it does not offer anything complicated and still leaves a good appearance. Ideas of this kind are submitted for the reader to draw on in designing his own hoods. For the pattern cutter we have several problems for laying out.

ORGANIZES SHEET STEEL COMPANY.

A new, half million dollar sheet steel mill is to be built at the northeastern edge of Louisville, Kentucky, on the Pennsylvania Railroad, by the recently



Designs for Hood.

designs are preferable, owing to holding the odors better and permitting them to escape at the top outlet. Much of the hood designing must be done to suit the job and the varnisher.

Most hoods are of a simple nature and are simple to develop. Above the side and front views of hood offers more thought in setting out the patterns.

Our sander hood differs considerably in design from those we showed in previous issue and this shows that design is a very important thing in the making of hoods. This one would set on the edge or over the belt wheel, and the suction would pick up all loose dust, and as it loosens in bending around the pulley.

Below we have another type of hood used on ma-

organized Louisville Sheet Steel Company. It is reported that the company has bought more than 100 acres of land upon which to build the new plant which, when completed, will be one of the largest and best equipped in the country. The Louisville Sheet Steel Company will manufacture galvanized sheet steel and fabricated products, comprising such products as metal conductor pipes, eaves troughs, roof and box cutters and other similar articles.

The directorate of the company is formed of men who are experts in this particular line of manufacturing, it is said. Dr. James Fraunfelder has been elected president of the corporation. H. E. McCoy, who for the past 15 years has been in charge of the galvaniz-

ing for Berger Manufacturing Company, Canton, Ohio, is vice-president. H. L. McKenzie has been elected treasurer and general manager.

Mr. McKenzie will be the active head of the company. For the past eight years he has been general sales manager of the Canton Corrugating Company, a subsidiary plant of the Canton Sheet Steel Company, Canton, Ohio. Previous to that he was connected with the Berger Manufacturing company as a department manager. Mr. McKenzie is said to be one of the pioneers in the galvanizing work in this country.

J. W. Lucos, of Cleveland, will be secretary of the new concern. He has been general sales manager for the J. M. & L. A. Osborn company, of Cleveland, for a number of years. F. C. Negley, of Canton, Ohio, has been elected assistant secretary and treasurer. The officers, with Frank Paquelet, Louisville merchant, will comprise the board of directors.

SERPENTINE SHEAR PERFORMS WIDE RANGE AND VARIETY OF WORKS.



Number 2 Lennox Serpentine Shear,
Arranged for Belt Drive, Supplied
by Joseph T. Ryerson and
Son, Chicago, Illinois.

In most sheet metal shops, the task of cutting irregular shapes of sheets and plates has been an irksome and tedious labor prior to the invention of such improved machinery as the Lennox Serpentine Shear, which is supplied by Joseph T. Ryerson and Son, Chicago, Illinois. Formerly the class of work done by this machine was either performed by hand or else chopped out to shape by a straight-bladed knife machine—a slow and expensive method.

The Number 2 Lennox Serpentine Shear, shown in the accompanying illustration, takes care of the numerous, irregularly shaped pieces in a fraction of the time formerly required. With this machine, a marked irregular-shaped line on a sheet can easily be followed by the operator, as the machine is self-feeding. No pushing or straining is needed to feed the metal through the blades and the stock slides around easily out of the way.

All gears of the Lennox Serpentine Shear have teeth cut from solid metal, and each gear is carefully provided with substantial cast-iron gear guards so that the workman is fully protected. The machine may be instantly started or stopped because it is controlled by a conveniently located hand lever. Another excellent device on this shear is a roller hold-down which prevents the plate tipping while being sheared.

The hold-down is adjustable for different thicknesses of material. The Lennox Serpentine Shear can be furnished in different sizes varying in capacity from Number 16 gauge to $\frac{1}{2}$ inch. Full particulars can be had by addressing Joseph T. Ryerson and Son, Chicago, Illinois, or by writing to their nearest service plant in Detroit, Michigan, St. Louis, Missouri, or New York City.

ANNOUNCES PLANS FOR SALESMEN'S AUXILIARY TO WISCONSIN SHEET METAL CONTRACTORS.

One of the results of the excellent cooperation between salesmen calling on the sheet metal trade of Wisconsin and the members of the Wisconsin Sheet Metal Contractors' Association are the plans now under way for the formation of a salesmen's auxiliary to that Association. The matter is in charge of Ernest C. Taylor, sales representative of the Rudy Furnace Company, Dowagiac, Michigan, who writes about it as follows:

TO AMERICAN ARTISAN AND HARDWARE RECORD:

At the convention of Wisconsin Sheet Metal Contractors held at Milwaukee March 17th, it was decided that next year's convention would be a two days' session. This was done with the idea of making the convention of greater interest to the sheet metal man.

In order to further the aims of the Association in this regard, the salesman calling on the sheet metal trade in Wisconsin are planning the organization of an auxiliary to the State Association.

The purposes of this auxiliary are two fold. First: To assist the Association in enlarging their scope of activity. Second: To bring the salesman in closer contact with the organization and to work with them in the solution of their problems.

Any salesman calling on the sheet metal or furnace trade is eligible to membership. It has been suggested that those interested write to me for further particulars. We will appreciate your giving this mention as we feel that it is the easiest way of getting in touch with those so interested. Appreciating your cooperation in this matter, I remain,

Very truly yours,

ERNEST C. TAYLOR.

P. S.—Any changes or suggestions you have to offer in this regard will be appreciated

E. C. T.

433 W. Gilman Street, Madison, Wisconsin, March 17, 1920.

SALESMAN WITH INTELLIGENCE CAN COMMAND GOOD SALARY.

The salesman of today must necessarily know more about the goods that he is selling and the technical points of the business than the salesmen of twenty-five years ago. Intelligent salespeople are the real wants of the merchant at the present time. They are really hard to get, and where they are secured they command good salaries. The intelligent salesman can nearly always count on receiving double the salary that can be earned by the one who is not informed.

Sheet Metal Contractors of Wisconsin Cooperate in Convention for the Common Good.

The most practical form of Americanism is that in which the common good is the chief concern of every citizen. It is the kind of Americanism which characterizes the Wisconsin Sheet Metal Contractors' Association, and which finds expression in the organization's watchword: "Everybody is dependent on somebody for something. Everybody must work with somebody to secure the best results." In this conception of Americanism, the State is not an institution separate and distinct from the people. It is the people



Paul L. Biersach, Newly Elected President Wisconsin Sheet Metal Contractors' Association.

in their collective capacity. All the agencies of the State, therefore, are intended for the benefit of the people. It is only when the people cooperate in the use of the various departments of the State for the common good that true Americanism reaches its full powers. A remarkable evidence of this close working together with the State for the good of the people was given in the Sixth Annual Convention of the Wisconsin Sheet Metal Contractors' Association, held Wednesday, March 17, 1920, in the Colonial Room of Hotel Wisconsin, Milwaukee, Wisconsin. Of the three addresses formally scheduled on the program, two were by members of the Industrial Commission of the State of Wisconsin and gave proof of the close cooperation between the Commission and the Wisconsin Sheet Metal Contractors' Association.

Prior to the opening of the convention, a meeting of the Board of Directors of the Association was held at 9:30 o'clock in the morning. The first session began at 10:30 a. m. President E. B. Tonnsen delivered a brief but cordial address of welcome in which he

voiced the spirit of fellowship which is so notable a virtue of the Association. Then came routine reports of officers. The alert and energetic secretary of the Wisconsin Sheet Metal Contractors' Association, Paul L. Biersach, gave an account of his work during the year and made valuable suggestions to the convention. The full text of his report is as follows:

Report of Secretary Paul L. Biersach to the Sixth Annual Convention of the Master Sheet Metal Contractors' Association of Wisconsin, Held Wednesday, March 17, 1920, in Hotel Wisconsin, Milwaukee, Wisconsin.

It devolves upon your Secretary to submit to your hearing a short résumé of the work performed by and the accomplishments attained during the past year, at this, your Sixth Annual Convention.

You all know the conditions, under which the entire business community of this country, is laboring at the present time; the unsatisfactory labor problem, the uncertainty of the material production, transportation shortcomings—aye, every conceivable activity of undesirable business elements with which the business man and employer of today is heavily burdened. With such conditions confronting us, we are today in convention assembled, for the sixth time since our State Association was organized to discuss these serious problems and see whether we can not put forth endeavors to alleviate and possibly solve some of the existing evils inasmuch as they appertain to our particular branch of industry. It is not within my province to discuss the same in a lengthy report but will leave this entirely in the hands of our membership during the sessions.

Membership Is Steadily Increasing.

Membership: It is gratifying for me to state to you that our membership has slowly but surely increased in numbers during the past year under adverse conditions and your Board of Directors justly feel gratified at such a result.

Publicity: As was customary with past administrations, the present Board of Directors, in various ways, put forth their efforts towards publicity for the benefit of our Association and the Industry in general, with the satisfaction of realizing results much sought after. Reference will be made to some of these during the afternoon session.

Educational: This committee will be called upon to make their annual report some time during the day and we all will look forward with keen interest as to what they have to offer.

Partially Works Out Apprenticeship Problem.

Apprenticeship and Trade School: One of the most vital parts of our Industry is the Apprentice problem, which has been partially worked out by your Milwaukee Local in convention with Mr. Stewart Scrimshaw of the Industrial Commission. As said gentleman is booked on your programme for the afternoon session, your secretary does not wish to trespass on your time with this subject nor take the wind out of brother Scrimshaw's sails; leaving it entirely to him for disposal.

Legislative and Industrial: Both of these committees are of vital importance and very good results should be obtained from their activities during the past year.

Employer and Employee: Who can suggest some solution as to the best method to be employed towards making both Employer and Employee realize that one is dependent upon the other and must cooperate with each other for their mutual benefit and welfare. Pa. Geussenhainer is anxious to have some one come forward during the Question Box session this afternoon on this all important subject.

Treasury: Your genial treasurer will give you a detailed report of the financial affairs of your Association some time during the day. It is needless for your secretary to say that "Bill has filled the bill to the letter" and we should recognize the services he has rendered.

Appreciates Service of Trade Papers.

Trade Papers: We all feel gratified and appreciative towards the

AMERICAN ARTISAN AND HARDWARE RECORD
Metal Worker, Plumber and Steam Fitter
Sheet Metal, and our own
Warm Air Heating and Sheet Metal Journal

And herewith through your secretary, offer our sincerest thanks for their kind cooperation in our endeavors and our cause. There is not one copy published throughout the year by any of these aforesaid which did not contain some item of importance not only for our Association, but also for the industry in general. They are an asset to our Association.

Your Convention Committee has formulated an interesting programme, but the same will not be complete nor successful unless you make it so.

Thanks Other Offices for Cooperation.

My thanks are herewith extended by me towards the other officers and Board of Directors for their kind cooperation and support unsolicited given me during the past year. It was really a pleasure for me, indeed, to work with them.

In conclusion: Let us use our best endeavors to elevate the standards of our vocation in which we are engaged and so conduct our affairs that others in our vocation may find it wise, profitable and conducive to happiness.

The rest of the morning session was devoted to reports of officers, report of auditing committee, roll call of officers and committees, reading minutes of previous meeting, committee reports, unfinished business.



John Bogenberger, Chairman Question Box and Nominating Committees, Wisconsin Sheet Metal Contractors' Association.

communications, collection of dues, new business, proposal and election of new members.

President Tonnsen appointed Henry Wernecke of Manitowoc and A. Kroupa of Racine to serve as Auditing Committee.

Intense interest was developed by the queries submitted through the Question Box under the able direction of Otto Geussenhainer, Sheboygan, Wisconsin, Chairman of the Question Box Committee.

In the forenoon the first six questions printed in the program were discussed, namely:

1. What are the aims of this State Association?
2. If no practical results are attainable any way is it worth while to continue?
3. Why cannot employers of Sheet Metal Journeymen who agree to furnish the chairman of the Question Box Committee with questions set a good example by keeping their promise?
4. Is it right that we are always willing to let George do it?
5. How can you separate your store-accounting from the shop?
6. What is the best way to estimate furnace jobs?

After a brief recess for luncheon, the afternoon session appointed John Bogenberger of Milwaukee

chairman of the Nominating Committee and selected J. B. Wallig of Kenosha and G. G. Jones of Racine to constitute the remaining personnel of the committee.

The assembly was treated to a highly instructive discussion of the apprenticeship problem by Stewart Scrimshaw, Supervisor of Apprenticeship, Industrial Commission, Madison, Wisconsin. His address in full is as follows:

Address on "The Apprenticeship Problem," Delivered to the Convention of Wisconsin Sheet Metal Contractors' Association, March 17, 1920, in Hotel Wisconsin, Milwaukee, Wisconsin, by Stewart Scrimshaw, Supervisor of Apprenticeship, Industrial Commission, Madison, Wisconsin.

I can assure you it is a source of great inspiration to have the opportunity to present to your body this morning the subject which lies close to the heart of our present industrial problems. For a long time many trade associations have been so indifferent to the fundamental causes of our industrial disturbance as to pay no heed to "the handwriting on the wall." The fact that your association has seen fit to place this subject on the head of your program is not necessarily any compliment to the speaker, or to the organization he represents, but a sincere reflection of the intelligence of this association in recognizing at this time the biggest problem of the trade in which you are engaged. Your industry faces an enviable future. Your work is being taken up in fields which, in the past, were never thought of. In this iron age the sheet metal work is growing in its importance, and more and more the public is beginning to realize the many great advantages which grow out of the manufacture of sheet metal commodities.

Need Skilled Men in the Trade.

However, your trade can not take its destined place in the industries of our economic order unless there are men who can perform the work and the tasks which are necessary to enter the services in your line of work. It becomes a matter then of common sense, involving as it does the law of self-preservation, that the members of this craft give their serious thought and attention to the working out of a real solution for the securing of skilled men in the trade.

Adequate Training Is Essential.

During the last generation we have depended too much upon European immigration to supply us with skilled mechanics. We have relied too much on the tricky ingenuity of the American boy, until we face today what is an apparent bankruptcy of skilled labor supply in the country. No matter what rate of wages you pay today, that in itself does not act as the magic wand in bringing to the surface competent mechanics. One dollar an hour, two dollars an hour, nor five dollars an hour, will bring competent mechanics to your establishment if these mechanics are not in the market. They can only be had by going to the source of our manhood, which is the rising generation of boys, and taking those that are adapted and interested in your line of business, and giving them proper and adequate training.

There was a day when the training of a boy in a skilled occupation was considered an honorable and also a profitable undertaking. There was a time also when the learning of a skilled occupation by a youth was considered to be one of the most desirable things of life. Today you find the boys rushing to the factories, heedless altogether of their future welfare, and sacrificing valuable years of their life on the altar of present day ease and luxury.

The White Collar Fallacy.

It is hard to put the finger on the spot and say where the fault lies, but we breathe the spirit everywhere. The idea seems to have gotten into our educational system that the only honorable work in life is that which can be performed by one wearing a white collar, or what that indicates. An honest respect for skilled labor seems to have been largely lost sight of. Politicians and many uplifters talk patronizingly about the dignity of labor, while most of them that talk that way have themselves disdained to put their hands to any occupation of manual labor. The appreciation of labor is not a matter of the tongue, but a matter of the heart, and when the people of this land really believe that it is a good thing to work, and to be able to take part in the production of the commodities necessary to the lives of everyone in civilized society, then conditions will materially improve.

Under the present conditions boys go to work where they can get the most money. They convince themselves, and are re-enforced in that conviction by their parents, and sometimes supplemented in their belief by the teachers in the conventional public schools, that there is no such thing as proper education and training in industry, and that work is only a thing to be avoided. Such a thing as receiving a bona fide apprenticeship is entirely ignored.

Now the question follows, "How are business institutions, such as you represent, going to be able to get into their businesses the right kind of men and the right degree of efficiency of workmanship?" The answer is not an easy one, but when we get it at its source it reminds us of the old adage, "All roads lead to Rome."

Must Instill Right Ideas.

We talk a good deal at times, in a deprecatory way, about theorists, but even in this line, it is necessary to have the right theory on the subject. The right idea must first be instilled in the minds of every sane business man. He must realize that since he needs the proper kind of workmen he must take the necessary steps to produce these workmen. To illustrate, from an analogy expressed by one of my vocational colleagues, if one needs to have postage stamps for the expedition of mail, and those postage stamps cannot be secured to the mail matter except by some sticker, common sense dictates that whatever is the necessary cost to produce that sticker, that must be assumed, because without the sticker the stamp is useless. Likewise, in your industry, without skilled men the value of your industry is nil, and without the training you can not have the skill, so this training process is like the sticker for the stamp. It must be obtained at the necessary cost, whatever that may be.

Wisconsin Recognizes the Problem.

Now, gentlemen, the State has recognized this fundamental problem. It knows that the prosperity of the people which make up society is everlastingly dependent upon the ability to produce the commodities and perform the necessary services of life; hence, the interest of our legislators in putting upon the statute books the apprenticeship law, namely, Section 2377.

The purpose of this statute is to encourage the training of mechanics in all lines of industry, to build up for the next generation a great body of not only intelligent mechanics, but good citizens. The chief points in the law can be outlined as follows:

Chief Points of Law for Industrial Training.

In the first place, all minors learning any trade, craft, or business must be under written agreement. That written agreement contains the commonplace things which all bona fide agreements contain. It is obviously true that any conscientious business man who is willing to take a boy through an apprenticeship should certainly be willing to put down this agreement in writing, so that the boy will understand just what sort of an arrangement he has. This apprenticeship agreement must contain fundamentally three considerations: (1) The agreement must state the approximate length of the apprenticeship; (2) it must state the parts of the trade to be learned and the approximate time to be spent in these particular trade operations, so far as possible, and (3) there must be an agreement as to a wage which the boy can count on during his apprenticeship. It may be a minimum wage, but it is something which the employer guarantees the apprentice during his term of service.

Provides for Part Time School Attendance.

Furthermore, the law requires that during the first two years of the apprenticeship, each apprentice shall attend a part-time school to receive instruction in the theory of his trade, for the amount of half a day each week to be spent on the employer's time and at the same rate of pay as when employed in the shop. It must not be overlooked at this point, that it is assumed, not without foundation, that a boy who spends half a day each week in learning the technical elements of his trade, such as technical terms, shop arithmetic, drawing, etc., is going to more than make up to his employer the cost for this half a day's schooling. So much for the substantive features of the law.

Rules Governing Apprenticeship.

It has been well said that a law is no better than its administration and the success of a statute such as the one governing apprenticeship must be determined very largely upon the success of its administration. On examining subsection 9 you will find that the Industrial Commission of Wisconsin is charged with full power to carry out the intent of the statutes; it can make necessary orders, rules, and regulations as may be required in the premises. However, since the apprenticeship rulings affect so vitally the people of the trades it would be folly for a body such as the Industrial Commission to make rules and regulations governing apprenticeship without taking into consideration the conditions, the customs, and the desires and other interests of the people in the trade. Consequently, before any determination is made governing apprenticeship in any trade we make a point to call together representatives from both employers and employees to act as an advisory committee to the Industrial Commission in arriving at the proper standards for apprenticeship in the trade. It is highly desirable that in any trade there should be a standard apprenticeship arrangement for the whole state if practicable. Therefore, to an association of this kind we desire to bring to your attention findings which we anticipate should be of service to your trade throughout the whole state of Wisconsin.

Solicits Advice of Local Employers.

You appreciate, gentlemen, because you are practical business men, that it was better to start on this apprenticeship arrangement in a city in which the trade was more widespread than elsewhere. Therefore, we have solicited the advice of the local association of sheet metal employers, and also that of the organization of journeymen. We have had several conferences upon this subject and have agreed upon a statement which we desire to bring before your convention for your consideration and, if possible, your approval.

Uniform Apprenticeship Contracts.

I wish to say incidentally that the Industrial Commission furnishes to all the employers who have apprentices, or intend to have, uniform blanks for the apprenticeship contract. This form is used for all the trades, the individual trade indenture being made to cover the content of Exhibit A, and each trade makes up Exhibit A according to its own conditions. For the apprenticeship standards for the sheet metal working trade, or in other words, the Exhibit A of the apprenticeship contract, we submit to you the following statements. In the first place with reference to the length of apprenticeship it has been agreed that the following statement meets with satisfaction in dealing with the length of apprenticeship.

A. "The length of the apprenticeship shall be four years, each year to consist of 2,260 hours."



O. Guessenhamer, Chairman Educational Committee, Wisconsin Sheet Metal Contractors' Association.

Definite Length of Time.

Needless to say it is necessary to have some definite length of time specified; that is to avoid any misunderstanding due to vacations, sickness, or other vicissitudes which might come into the lives of either the apprentice or the employer.

In the second place, the statement of the trade to be learned has been determined as follows:

B. "The apprentice shall receive instruction and experience in the cutting and assembling of all kinds of sheet metal work, such as are used in skylights, cornices, conductor heads, fire-proof windows, lining fire-doors, construction of rain water pipes and gutters, etc., with such other experience and instruction as shall be necessary to develop the skill of a competent sheet metal worker; and such other experience and instruction in the use of hand tools and hand or power machines, as shall be necessary to develop skill as a competent sheet metal worker."

"The apprentice shall attend the vocational school eight hours per week to follow such instruction and shop work as shall be agreed upon by the sheet metal workers' apprenticeship committee for which the apprentice is to receive the same rate of pay as while being employed in the shop. This instruction is to be held on the employer's time and according to the custom and practices of the co-operating part-time school."

This is perhaps the most difficult determination to make since all employers look for a statement which is fair and designed to do none any injustice.

Compensation to Be Paid.

The next proposition to be determined upon is the compensation to be paid. The law requires this statement be con-

tained in each contract, but it does not devolve upon the commission necessarily to determine the wages to be paid the apprentices. That is left to the individual employer and the boy, or to the local associations for agreement, because the practicability of enforcing a uniform rate of pay for apprentices in the state of Wisconsin is nil. In the last analysis one must pay the market rate, as I have indicated previously, in order to attract boys into the trade. When the right kind of boys once start to come into the trade, others will begin to follow as a matter of course.

If there are any special provisions concerning apprenticeship they must also be contained in the contract. An example of a special agreement is shown by the following statement which the committee has agreed to insert under Exhibit A:

C. "At the satisfactory completion of the apprenticeship, the apprentice shall receive a diploma issued by the state of Wisconsin under the seal of the Industrial Commission and countersigned by the employer."

Good Will and Co-operation.

These points, gentlemen, that we have just outlined seem to be very simple, but nevertheless it requires much work, a considerable time, and a certain amount of good-will to get people together to agree upon such a simple statement as we have here presented, and we trust that we may have your sincere consideration of this report, and if there is no good reason why you should not accept it, you will give it your approval and support.

The merits of this question can be further elucidated by a discussion from the floor, and any questions which occur in the minds of the members present should be frankly stated. The facts should be met, and a solution of this problem obtained by the consideration of what is both practicable and desirable.

At the close of Mr. Scrimshaw's helpful and illuminating address the assembled contractors manifested their appreciation by hearty applause.

How the sheet metal contractor can increase his business and at the same time give more scientific and valuable service to the people was indicated in the address by C. W. Keniston, Sanitary Engineer, Industrial Commission, Madison, Wisconsin. The complete text of his address is as follows:

Address on "Ventilation and Exhaust Systems as Applied to the Sheet Metal Industry," by C. W. Keniston, Sanitary Engineer, Industrial Commission of Wisconsin, Delivered March 17, 1920, to the Sixth Annual Convention Master Sheet Metal Contractors' Association of Wisconsin, in Hotel Wisconsin, Milwaukee, Wisconsin.

My friends, this is a subject which is opportune and vital to the interests of the public and industrial health. The success of any movement or campaign depends on the co-operative spirit and punch of each individual, and when I received your valued invitation to address you at this convention, I thought that the desire to cooperate in this general movement for industrial health lived within your organization. But when I saw the definition of your watchword on this program, "Everybody is dependent on somebody for something" and "Everybody must work with somebody to secure the best results," then I knew what I wanted to talk to you about, and so I will tell you my impressions of how you can best help and be helped by the work on ventilation and exhaust.

Beginnings of Industrial Health Movement.

The present industrial health movement began in England with the beginning of the use of machinery, a little more than one hundred years ago. The movement dealt first with children, then women, and now includes all industries and workers. The industrial health campaign is now recognized in our State laws by the occupational disease amendment to the Compensation Act, whereby occupational diseases are made compensatable. Nor is Wisconsin the only State in this progressive movement. Massachusetts, Connecticut, California and North Dakota have similar occupational disease laws and New York, Ohio, Illinois, and Pennsylvania follow close seconds in their work to prevent industrial disease.

Industrial Disease.

Let me define what is meant by this term. Industrial diseases are any diseases or disturbances of health the causative factors of which can be found to exist in the conditions of employment the patient had been exposed to. The State is now engaged in an active campaign for the elimination and prevention of these diseases. This will be a lasting campaign because industrial health is a national as well as a community asset. Our ability to compete with other

nations depends on the health of all our people working in industries.

Best Cure Is Prevention.

Prevention is the best cure for industrial disease and using this as a principle it will be the policy of the Sanitation Department of the Industrial Commission, working with your cooperation, to better those conditions of employment which may be considered as industrial disease hazards and to which occupational disease may be directly traced. These conditions may be divided into the following eight general classifications: (1) dust, gas, and fume; (2) dirt; (3) darkness; (4) dampness, cold or heat; (5) bad air; (6) fatigue; (7) poisons; (8) infections.

Sanitation and Ventilation.

The general methods employed to better these conditions are sanitation and ventilation. Ventilation, the method in which you are vitally interested, applies to six of these eight general hazardous conditions. The design and installation of these health safe-guarding systems is *your work*. This part of your industry is rapidly growing and is bound to increase with the advance of our Nation in the use of preventative measures against disease. Gentlemen, *the point is you are now interested and vitally concerned* in clearing from industry such hazards as dust, gas, fumes, dirt, dampness, cold, heat, bad air, fatigue, and poisons. In following the work of the Sanitation Department you will



Louis Hoffmann, Chairman Resolutions Committee, Wisconsin Sheet Metal Contractors' Association.

be called on to design and install ventilation and exhaust systems which actually will prevent disease. I am going to define to you these systems perhaps in a little different way than you are accustomed to; because these systems can not be merely considered as so many pieces of metal.

Defines Ventilation System.

A ventilation system is composed of movements of the atmosphere, so regulated and controlled by any machinery or equipment that persons or materials within certain defined boundaries (such as rooms, factories, buildings, and other places of employment or local places within these areas) may be supplied with pure, fresh and clean air, for the purposes of breathing, purification and protection. Fresh air is both stimulating and refreshing to breathe and does not contain noxious gases, dusts, fumes, vapors or other material in such quantities as to be injurious to the health.

Ventilation When and Where Required.

Ventilation systems are required in all places of employment or parts thereof

(a) Whenever smoke, gas, dust, fumes, vapors, foul or vitiated air are present in sufficient quantities to obstruct the vision or to be irritating or obnoxious or injurious to the health.

(b) Whenever any industrial poisons are used or stored or handled in such quantities or manner that they may be or may become irritating or obnoxious, or injurious to the health.

(c) Whenever there is not available a sufficient amount of air space per person.

Defines Exhaust System.

An exhaust system is composed of movements of the

atmosphere so regulated and controlled by any machinery or equipment that air contaminated with gases, dusts, fumes, poisons, vapors or other materials injurious to the health may be removed from certain defined boundaries such as rooms, factories, buildings, and other places of employment or local places within or without these areas.

An exhaust system may be so designed and operated that it can also serve as a ventilating system.

Local exhaust systems are required in all places of employment or parts thereof whenever there is in operation any process, machine, equipment or present any materials in transit, use or storage, that can or does produce conditions which may require a ventilating system.

Systems Are Interchangeable.

Ventilation and exhaust systems may be so designed, constructed and operated that either one can serve for the other or both. In other words, a ventilation system can be made to serve the purposes of an exhaust system; and an exhaust system can be made to serve the purposes of a ventilation system. Local exhaust systems are used to remove the hazard at or as near as possible to the hazard's point of origin. Some of the places where local exhaust systems may be especially applicable are belts, drums, rolls, discs or other equipment used for grinding, buffing, polishing or sanding; paint and enameling departments; sand blasts, tumbling barrels and rattlers, vats, tanks, sumps, sinks, baths, furnaces, salamanders, forges, pits, tunnels, and dust or gas producing machines or materials.

Emphasizes Policy of Protection.

It is to be the policy of the Sanitation Department to ask that plans and specifications of all ventilation and exhaust systems be filed with the Commission. This, gentlemen, is a new departure. You ask, "Why are plans wanted by the State?" *PROTECTION* for employer in getting the best system for his requirements; *PROTECTION* to the employe in best saving his health which is his capital; *PROTECTION* for you, gentlemen, in helping you to give the best results by bringing to you the various types and principles that have given the best satisfaction elsewhere.

Importance of Prevention.

PREVENTION of the violation of the fundamental principles which may be a cause for the ultimate failure of a system, to the detriment of the contractor's reputation, or which might cause serious results, like explosions. *AN AID* for the Sanitation Department more efficiently and intelligently to carry on the work it is charged with; that is, to promote the industrial health of the State and prevent occupational diseases. All for the purpose of helping and guiding the growth of this industry along the very best lines; and promoting better coöperation between the contractor, State, employer, and employe. This is going to put each one of you on an equal footing with the other. This means the elimination of cutting a hole in the ceiling or the installation of a wall or window fan and calling it a ventilation system. The *POINT I WANT TO PUT ACROSS TO YOU* is that *YOU*, whose work is the installation of these systems, *NEED AN ENGINEERING DEPARTMENT* or the use of one.

Factors of Installation.

The installation of a system does not only mean putting in the sheet metal work. It means, after the system is installed, that the conditions of employment must be safe for health, and the factors which govern the design, installation and operation of these systems should be shown on the plans. Some of these factors are included in the following items:

- General surroundings;
- Plans and elevations;
- Location of windows, roofs, partitions, exits;
- Location of equipment and character of the work performed;
- Number of persons employed and their distribution;
- Available cubic feet of air space (total space less that taken up by equipment and materials);
- Location of proposed ventilation and exhaust machinery;
- Location and sizes of air inlets and outlets;
- Location, size and shape of ducts and pipes;
- Location, size and type of fans, motive power or ventilator;
- Materials used in construction of fans, ducts and buildings;
- Cubic feet of air moved per hour;
- Velocity of air per minute produced at the throat of the hoods of exhaust systems;
- Any proposed heating, cooling or purification apparatus used in connection with the system;
- Any apparatus used to take care of the discharge of the system.

It is not necessary that all of these items show on every plan, but these factors must be used as a guide in the design of systems. Approval of plans is not required before work is begun unless the party for whom you are working insists that such approval be given.

Sizes of Systems.

The plans in showing these items will enable this Department more intelligently to coöperate with you. Where two or more firms are bidding on any contract, in no case will the plans of one be passed on to the other. The department will only specify minimum requirements; anything beyond these is a matter strictly between you and the interested party. The Sanitation Department does not intend to control details of construction and design; except only certain definite fundamental requirements. I believe that the policy extended towards these details should stimulate a desire on the part of your industry to always make better systems every time you take a contract. The regulation of details does not help this creative spirit. Publication of the designs and practice which have given the best satisfaction will serve as a guide, and when made available to all will promote the welfare of the industry.

Exhaust systems may be constructed using the following velocities applied at the point of origin:

- 1000-2000 feet per minute for most light dusts, gases, vapors, fumes and foul air which are produced evenly.
- 2000-2500 feet per minute for most light dusts, gases, vapors, fumes, foul air and smoke, which are produced unevenly or periodically.
- 2500-3500 feet per minute for medium weight dusts, wood, or sawdusts and sand blasts.
- 3500-4500 plus feet per minute for heavy dusts, bark, chips and other heavy material.

Types of Systems.

The natural system, most commonly heard of and most thoroughly abused, you are but slightly concerned with, except as you change it to some other kind. You are dealing with the forced ventilation system, air blown into the plant and allowed to find its way out (or aided by auxiliary exhaust); the exhaust ventilation system, air exhausted out of the plant and allowed to come in through positive inlets (or aided by auxiliary system forcing some air in); and the combination system, where both ventilation or exhaust may be used to protect local hazards and at the same time ventilate the place of employment.

Forced Draft System.

One important feature about the design of any mechanical or forced draft system is that the air currents produced are not governed by the old natural law, "Hot air rises and cold air settles." These air currents are controlled by the velocities and motions produced by equipment. The two most necessary requirements are positive inlet and outlet. The only time when doors, windows, cracks, elevator shafts and skylights can safely be used is when the air is forced into the enclosure to find its own way out.

The Final Test of All Systems.

The size and types of systems are controlled by the items I have previously mentioned, which should appear on the plans. The details of the system can be fairly well gauged from these conditions also. The effects of materials used in process or construction of building come into play. The processes of manufacture can either use up the moisture in the air or fill the atmosphere with moisture, and this has to be considered when designing a system. Also it may be well to consider the fact that some systems must be constructed out of metal; when this is the case the proper material should be used because it only leaves a black spot on your record as a first class concern if a system fails in operation because of this mistake. There are many complicated technical questions attached to the proper design of some systems. *THE FINAL TEST OF ALL SYSTEMS* is the quality of the air used for breathing purposes. Not a U tube test, not a velocity test, but, gentlemen, the air must be pure enough so it can be considered safe for health. This all relays back to a previous statement; an engineering department or the use of such a department is needed and is a proposition which your industry would do well to consider.

Possibilities Are Unlimited.

The amount of work in sight is almost unlimited. It divides itself into two kinds, that of new installation and that required to be installed in existing plants. New installation is, of course, to the liking of some, the best business; but the man who has to put in a system where work is being carried on, in the presence of all kinds of obstacles as shafts, floors, walls, machinery and equipment, that man sure must have some Yankee ingenuity. However, his problem is definite, while new construction is designed to take care of future conditions, and in this respect the collection of data from all systems and publication of the best results obtained under various conditions will be a valuable asset to this industry and the State. It is impossible to estimate the total valuation of the work connected with the installation of ventilation and exhaust systems. My recent work in the Wisconsin industries shows me that your field of endeavor is unlimited. The real valuation can only be estimated as the sum of the profits saved to business because of fewer compensation claims, and the increased production caused thereby; together with the great saving to our work-

ing people by the conservation of their health. You have not made a scratch on the surface compared to the work which will be done throughout the State and the rest of the United States. Cooperation is the real thing needed. When I go to a plant which needs improvements, the very first thing these proposed changes or improvements must do to be worth while is to cause a greater balance on the profit side of the ledger; if it does that it will cause a greater profit for the employe which is his health, doing both it is a salable idea, otherwise useless and undesirable. Then, gentlemen, the first thing, the very first thing, asked me is this; and I have had it asked me repeatedly, "Who can I get to do this?" Can you appreciate my position? I must not recommend any one particular firm. I should recommend the Wisconsin firms first. I should recommend the firms nearest the vicinity of the plant. You can readily see that if provided with the proper personnel or grouping of your industry that you and the Sanitation Department could help each other much better and the movement for Industrial Health would be materially helped.

Cooperation First and Last.

For your consideration I am leaving these thoughts: **COOPERATION**: First, last and all the time; **PREVENTION OF DISEASE**: by ventilation and exhaust systems so designed, installed and operated that conditions of employment are safe for health. **AN UNLIMITED FIELD OF WORK**: which is increasing each day and calling for the man with the foresight and the nerve to make his business of today the big corporation of tomorrow.

Mr. Keniston's masterly treatment of his subject made a profound impression upon his audience and elicited the sincere applause of the delegates at its conclusion.

Mr. Keniston was followed by C. W. Pansch, First Vice-President Wisconsin Sheet Metal Contractors' Association, Racine, Wisconsin, who spoke on the topic of "Business Ethics and Business Burdens."

That honor, truth, justice, and good fellowship are compatible with profit-making is proved in countless examples of daily practice. Indeed, as Mr. Pansch points out, these virtues are the most potent influences in the obtaining of success. The full text of his address is herewith appended:

Address on "Business Ethics and Business Burdens," by
C. W. Pansch, Newly Elected Secretary Wisconsin
Sheet Metal Contractors' Association, Delivered to the Sixth Annual Convention of that Organization, March 17, 1920, in Hotel Wisconsin, Milwaukee, Wisconsin.

The subject assigned to me for this little talk seems as though it would be better fitted to one of the members of our organization who has become successful in this business and who, by his success could more easily give a survey of the work in hand, than I shall be able to do. However, feeling of course that I can not say very much of interest to those who have made their place in the sheet metal world, I will endeavor to talk to the men in my class.

Keep Growing by Working and Thinking.

The little fellows we will, for one moment, consider as being green; but never lose faith, boys; you know that anything that is green will grow, so just put your shoulders to the wheel and work and think, then you will soon grow out of your present surroundings into bigger ones. Just as long as you keep working and thinking you will keep growing. Remember always that you must go ahead; if you stand still you can not grow. Years of hard, tough work, beset with obstacles of every nature are in our path, but by a strong effort we can push anything aside and advance. Although there are many knocks and bumps which every man in business encounters, he will finally find the path improving until he has hit the fine pavement of success, riding in a Packard and leaving the push cart behind.

Great Opportunities Are Now Available.

There is a greater opportunity at present than at any time in the past to make a success of the business which is claiming our daily attention. The highest plane we can attain at present, I firmly believe, is the one which we will be judged by in the years to follow. Many men who never made real money are becoming wealthy today. Losses in business were never less in our history than right now. It is, therefore, up to every one of us to make the most of this wonderful prosperity which, mark me, will not continue long.

The Cost of Doing Business.

These facts naturally lead us to important matters pertain-

ing to our business, namely, business ethics and burdens; also a few ideas on the old, worn subject "overhead," which must necessarily be brought up before the convention closes. It does not matter how much has been said for or against the old demon, it is and always will be over us—overhead. In the good old days of long ago, men handled their business without much thought or worry in regard to the cost of doing business, taking less of everything, it was not as big a factor as it is today. As things now stand, the more business one does the more one will try to distribute the cost of doing it equally on the different parts which make it up. When overhead was in its infancy it was a certain percentage added to the cost of material and labor. These three corners of the cost were used in finding the selling price, but found little favor, because the cost of doing business was figured on the selling price of the job and nearly always figured on the cost of the job. The difference in the cost and selling price as a base necessarily cut the profits to about one-half of what was really expected. Then came the change of letting the cost of material and labor stand for a given percentage of the selling price.

Old Way of Figuring Overhead.

We decide what percentage of our sales the cost really is by referring to past records, then adding a percentage of profit to this giving a unit which we use as a division for every



R. F. Jeske, Member Ways and Means Committee, Wisconsin Sheet Metal Contractors' Association.

dollar in sales. If we found that 15 per cent of our sales were used as the cost of operation of the business and 15 per cent was the desired profit, then the sale price being 100 per cent, we deduct 30 per cent used as cost and profit and divide the cost of the labor and material remaining by 70 per cent, then multiply by 100. This was used to give us the selling price, which, if we deducted the profit and cost we figured, we could have left the amount we started with, namely, the cost of labor and material.

Calculating Cost by Productive Payroll.

A few years back a large number of progressive contractors began to try the method of using the productive payroll as a fairer basis to figure from. By referring again to back records we find that by figuring a certain percentage of the productive labor in dollars, which has been anywhere from 60 per cent to 100 per cent, gave a fairer medium from which to work. This proved very well fitted until wages were higher during the war; now several changes are again necessary. At present several men in this organization are working out a different method which will be published soon in our magazines. One method is to apply part of the cost on the material and the balance on labor, while the other deals in a certain charge to every hour of productive labor, regardless of what the cost of that hour's work is. I firmly believe that very shortly the leading way of figuring will be the last one mentioned. So much for the survey of the past—now a peek at the future.

The Division of the Dollar.

Gentlemen, it can not be stated too often or too strongly—figure to get a profit, and then study the methods you follow. Very soon the rights and wrongs will show for themselves. I believe the best way to explain the importance of

the items which enter into a dollar of sale is to take a new dollar, a nice round silver one, and from the center divide off a certain portion of it, which will be used to buy material; next divide off another portion, which shall pay for the labor in the sale; then take a slice for the part of the dollar used in paying for the cost of doing the dollar's worth of business. If you have been fair to your customer, your workmen, and yourself, you will have a nice space between your first and last cut. This last space is, of course, your profit. If you have not given a great deal of time and thought to the divisions I mention you are very liable to find the first and last cut overlap, meaning that you have made no profit at all. Just think for one second how easily you can fool yourself. No doubt you have all been surprised and perhaps disappointed when the closing entries were made and found that the addition to investment account or money left in the business was not what you expected it would be. That is where you must study the division of the dollar and learn to make the two first cuts a bit smaller in order that enough room is left for the two little ones, but remember that the small ones should be the big ones in your mind when you begin dividing. This little trick is what I believe will make a business show a larger profit quicker than any other thing.

Gaining Confidence of the Public.

Next follow the service you give your customer. You will always find that the public does not have the same confidence in all men. It follows then that any man can gain the public's confidence if he will try. We have seen where one man has worked out to a wonderful degree in one case, and another has failed utterly. Cheap, inferior work is the thing to be avoided first and last. More men fail because of cheap, inferior work and poor judgment than from any other cause. Let your customer know that you are in business to make some money and they will think more of you than if you try to get him to believe that you are giving him something for nothing. After acquiring the confidence of the people from whom you are drawing your salary, as it were, it is just as important to keep it. Repeaters are what count most to make for increased sales and bigger business. Herein lies food for more thought. By keeping ever foremost in your mind the wants and wishes of your customers places you in a position to take care of them best when you are needed. Everyone admits that a satisfied customer is the very best advertisement any business can have. Therefore, it behooves every man in the business to have as many of those ads as it is possible for him to acquire. A great help to this end is the complete co-operation of your employees. This also can be acquired, and is measured by the degree of interest you put forth in your employees. If careful supervision is given every small detail by yourself or a competent foreman, it will soon be noticed by your customers, and also by your help—all of which goes to make a better job and eventually a better profit.

Keep Shop in First Class Condition.

Keeping the shop in first class shape, benches and racks in good repair, and floors clean, using the most progressive machinery and shop tools, helps your employees to have more interest in their work. Prompt collections on all accounts is very important to any business, and invoices should be sent to every customer the day the work is done. This, you will find, is a great help in paying your bills on time, and if practiced faithfully will positively place you in the ranks with those who always discount.

Friendship Between Competitors.

Another important duty to your business is your interest in your local association. Great good can come to any man who associates with his competitors. Years ago you seldom found any friendship between two men in the same line of business. Today all is changed; you can very often find all of the men in a town real chummy at their little club meetings, cleverly roasting each other on things they did not do right, and, believe me, some wonderful lessons are learned by what the other fellows think of you and are slow about telling you. As for our little bunch from Racine, we often find neat little surprises waiting for some one who least expects it, and these little surprises do a world of good to the fellow who has stepped off of the tape, and the rest who had heard he did. One fellow's mistake should always help him to be careful, and save the other the same experience.

In closing I hope that when we are next assembled in convention we will have Wisconsin Sheet Metal Contractors organized 100 per cent.

In the afternoon the following numbered queries were briefly discussed through the Question Box:

7. What can we do to relieve the manufacturer of the necessity of selling direct to our customers?
8. Can the Industrial Commission assist us in getting tinner apprentices?
9. What is the best inducement to your help to get efficient service?
10. How and where are we going to get tinner's?
11. What is the best way to solder aluminum?

12. How can we best increase our buying efficiency?
13. Are there any here among us who make the repairing of automobile radiators a specialty?
14. If the slogan "Trade Protection" (from the manufacturer or jobber) is any good at all, why should there not be some trade protection between members of this Association?
15. If competition is the life of trade, in what way is the trade benefited if the members of the trade through competition are kept on the verge of bankruptcy?
16. How many of you subscribe to at least one trade paper and actually read them?
17. Can you afford to get along without a trade paper?
18. What is the most practical way of estimating—(a) Metal cornices? (b) Tile roofing?
19. What can the Association do to interest boys so that they desire to learn the trade?
20. Where has a boy the best opportunity to become an all around tinner?
21. How many masters take an interest in the welfare of their men?
22. Is it not encouraging to the students of the trade school if the masters pay frequent visits to the school to review the work done?
23. How many give a discount for cash and what are the results? Is it beneficial?
24. How can we meet competition and get a good profit?
25. Is it advisable to go light on purchases during the year 1920?
26. What are the building prospects for the year 1920?
27. Does bonus system pay in jobbing business?

At 5:45 p. m. the afternoon session adjourned for an informal dinner in Badger Room of Hotel Wisconsin, given to the delegates by the Milwaukee Local of the Wisconsin Sheet Metal Contractors' Association. The menu was genuine. In these days of depreciated currency, words on the average bill of fare need to be discounted about 78 per cent in order not to avoid disappointment when the dishes are actually brought on the table. The Milwaukee Local as host put a premium on every word in their menu and served a dinner to their guests which was very good in quality and abundant enough in quantity to satisfy the appetite of the hungriest apprentice that ever sat down to a meal. "Gilt Edge" cigars of prime quality were distributed among the guests with the compliments of R. J. Schwab and Sons Company of Milwaukee, Wisconsin. Daniel Stern, of AMERICAN ARTISAN AND HARDWARE RECORD, gave the guests a useful souvenir in the form of a one-foot folding steel rule contained in a leather case.

The evening session began at 7:00 o'clock in the Colonial Room of the Hotel Wisconsin. The remaining questions of the printed list were taken up through the Question Box under the Chairmanship of Otto Geussenhainer, as follows:

28. What form of service—not already available through your State or the National Association—is most needed at this time?
29. Did you ever think of showing architects pictures of fine cornices and similar ornamental sheet metal work? Don't you think this would assist in bringing this business back to life?
30. Do you ever commend your employees for good work they have turned out? Or, do they only hear from you when mistakes are made by them?
31. In the presence of a customer or visitor, how do you treat your employees? When the customer or visitor leaves, does he take the impression with him that you lack good sense and that your employee's head is full of scrap iron?
32. Would it not be advisable and beneficial to both employer and employee if the Unions would permit the men to work nine hours per day and six days per week, without demanding time and one-half for nine hours' work or less per day, when the demand for mechanics is as great as it is at present and the obtaining of mechanics is almost impossible?
33. If overhead is based on protective labor, should it be applied to overtime and double-time on the same basis?
34. Would taking a secret ballot upon which each member present would mark his percentage of overhead, in either

gross sales or productive labor, give the members information as to the average overhead of sheet metal shops?

35. Should the State Association raise its dues to \$5.00 in order that it may do more and better work?

36. Would the holding of State Conventions in the different cities of the state be of any help in building up the Association and also Local Associations?

Ralph W. Blanchard of the Chicago office of Hart and Cooley Company, Incorporated, spoke at the evening session and suggested to the delegates that they devote at least two days to next year's convention, because it was too much of a strain upon the members to try to do as much as they had accomplished in the one day's convention this year, and to do it in twelve hours of almost continual high tension sessions.

E. C. Taylor of the Rudy Furnace Company, Dowagiac, Michigan, spoke on matters of interest to the trade. He told the delegates that in order to further the aims of the Wisconsin Sheet Metal Contractors' Association, the salesmen calling on the sheet metal trade of Wisconsin are planning the organization of an auxiliary to the State Association. The purposes of this auxiliary are twofold: First, to assist the Association in enlarging the scope of its activity; and, Second, to bring the salesmen in closer contact with the organization and to work with the sheet metal contractors in the solution of their problems.

Any salesman calling on the sheet metal or furnace trade, he said, is eligible to membership in the new auxiliary. He suggested that all such salesmen write to him for further particulars. In order to give this suggestion wider publicity, his street address is herewith set down, namely, Ernest C. Taylor, 433 West Gilman Street, Madison, Wisconsin.

President Tonnsen called upon Daniel Stern of AMERICAN ARTISAN AND HARDWARE RECORD for a speech but he begged to be excused on account of ill health.

Two sets of resolutions were adopted by the convention, as follows:

Resolution.

RESOLVED, That the State Association of Sheet Metal Contractors endorse the apprenticeship law, as administered by the Industrial Commission of Wisconsin; and

BE IT FURTHER RESOLVED, That we approve of the apprenticeship schedule as drawn up by the Wisconsin Sheet Metal Workers' Commission of Wisconsin, that we pledge our support to this work, and that we will do all in our power to train mechanics in the sheet metal industry.

Whereas, an intelligent, thrifty and saving citizenship is the greatest guaranty of the prosperity of the nation, or any subdivision thereof, such characteristics being a certain proof of a strong, self-reliant and independent people, and

Whereas, the Government Savings Organization, conducting the national thrift campaign in the Seventh Federal Reserve District for the United States Government, urges wise appending, systematic saving and the purchase of Thrift and War Savings Stamps and Treasury Savings Certificates, and

Whereas, through the purchase of such Treasury Securities there is not a man, woman or child who

may not become a participant in the post-war reconstruction of the entire world and a shareholder in our great Government, now therefore

Be it resolved by this body

First—That the members be urged to practice wise spending and systematic saving:

Second—That the members extend consideration in every way to thrift, giving expression thereof by saving as much as they may be able, and investing as much as they may be able in Treasury Savings Securities.

Third—That unqualified endorsement be made by this body of the national thrift movement.

Before the final adjournment of the Convention at the evening session, the election of officers for the ensuing term was held resulting in the choosing of the following members to administer the affairs of the Wisconsin Sheet Metal Contractors' Association, during the coming year:

President: PAUL L. BIRSACH, Milwaukee;

First Vice-President: C. F. WARNING, Oshkosh;

Second Vice-President: H. WERNECKE, Manitowoc;

Third Vice-President: FRANK J. ROMBERGER, Milwaukee;

Fourth Vice-President: CARL ANDERSON, Racine;
Fifth Vice-President: F. W. DIEDRICH, Fond du Lac;

Secretary: C. W. PANSCH, Racine;

Treasurer: WILLIAM GALLUN, Milwaukee;

Sergeant-at-Arms: A. SCHUMANN, Milwaukee.

The convention came to a close with a Valedictory by Otto Geussenhainer, Chairman of Question Box Committee.

Among visitors at the convention who paid the closest attention to the proceedings were Arthur Stremel, President and Manager of the Stremel Brothers Roofing and Cornice Company, Minneapolis, Minnesota, and P. J. Jacobs, Secretary, Wisconsin Retail Hardware Association, Stevens Point, Wisconsin.

DEPENDABLE QUALITY IS THE BEST REASON FOR BUYING.

For the man who intends to stay in business and extend his trade by satisfactory work and service there is no better guide in the purchase of supplies than dependable quality. Poor material costs more than good material. The cost of poor material is not paid in full when the sheet metal contractor pays the price at which it is billed to him. There are other costs. One is the cost of getting new customers to replace old customers whose business has been lost through the dissatisfaction resulting from the poor material. Another is the cost in wages and time. Mechanics can not do as good a job with poor material as with good material. It takes them longer to get the work done. This cost is well expressed by Tom Keenan speaking for David Lupton's Sons Company, Philadelphia, Pennsylvania, when he says:

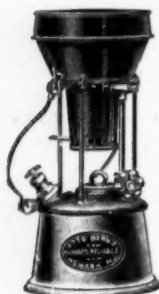
"Solder's worth something nowadays, and time is worth more. I can't afford to pay my men to stand

on a ladder and fill a loose elbow joint with solder; and I won't ask my customers to pay for it."

Being of full rated gage thickness and heavily galvanized, Lupton Perfect Fitting Elbows, made by David Lupton's Sons Company, Philadelphia, Pennsylvania, are described as dependable in the true sense of the word. The joints have a long taper which makes them hold securely, even without solder, declare the manufacturers. These elbows are made in all standard sizes and angles, plain round, round corrugated, and square. Inquiries concerning Lupton Perfect Fitting Elbows will receive prompt and courteous attention if addressed to David Lupton's Sons Company, Allegheny Avenue and Tulip Street, Philadelphia, Pennsylvania.

IS STRONGLY AND DURABLY MADE.

In the accompanying illustration is shown the "Always Reliable" Gasolene Furnace which is made by Otto Bernz of Newark, New Jersey. An important characteristic of this furnace is the "Never Leak" pump. The plunger of this pump screws down and out of the way, preventing it from becoming bent or broken. The needle at the bottom of the pump acts as a double-check. If the internal check becomes out of order through the use of dirty gasolene or otherwise, the pump can still be used by screwing down



"Always Reliable" Gasolene Furnace, Made by Otto Bernz, Newark, New Jersey.

The plunger. The brass work on this furnace is very heavy and all the castings are of malleable iron. The coil is made of extra heavy pipe and the shield is reinforced by wires in the bead at the top. It has a malleable iron base, which makes it very strong. The reservoir has a funnel which simplifies filling, and there is a "dust proof" cap attached to the filler screw. This cap prevents dirt or dust from falling or being washed into the tank. These furnaces can be had with either a heavy tin or a heavy galvanized iron tank, which has a galvanized cast iron top and a malleable iron ring at the bottom. For further details and catalog of the Company's other products, dealers should write to Otto Bernz, Newark, New Jersey.

TELLS HOW TO USE "ALU-MEND."

So sincere and earnest are the claims of the Alumend Manufacturing Company, Aurora, Illinois, in support of its preparation for soldering aluminum that it seems only right to publish the directions for its use. There is only one fair test of this product and that is, in giving it a trial, to follow the directions exactly as they are set forth. Here they are:

Use three-pound soldering iron, six pounds to the pair. Two irons are advised, so as to revert, thus keeping the heat during the tinning. The soldering irons must be well tinned at all times in the ordinary way, using regular half and half solder for tinning the irons. Do not use the soldering irons for any other purpose, except for aluminum soldering.

Aluminum must be well filed or scraped around the

parts to be repaired. Then apply the flux freely on the metal at the starting point of tinning. Then with the heated soldering iron, as hot as it will stand without removing the tinning from the irons, melt the aluminum solder into the flux with the heated iron. Keep the solder and flux worked smoothly together in the act of lead burning, not by quick jabs of the irons.

When arriving at about 350 degrees of heat at the point of the metal to be repaired, you can see the tinning begin. The hotter the metal gets the nicer you will do the tinning. Keep on with this process until you have a perfect seat of tinning at the starting point. Then proceed tinning as you advance. When you find you cannot tin the metal any further, it is because the flux that you have already put on has been destroyed by gas or the removal of the oxide coating, as it is known, that forms to the face of the metal. Wipe the destroyed flux away, scrape down a little further than what you have already tinned, apply more fresh flux with the solder and the heated soldering iron and thus proceed until you have tinned perfectly all around the parts to be soldered. Then float or plumb according to your judgment the strength needed for the part you are repairing.

Those interested in this preparation should write to the Alumend Manufacturing Company, 386 New York Street, Aurora, Illinois.

USES ONLY HIGH GRADE MATERIALS.

Improvements of practical importance are said to have been made on portable or bench ripping shears in the Viking Shear, illustrated herewith, manufactured by the Viking Shear Company, Erie, Pennsylvania. The best grade malleable iron is used in



Viking Shear, Made by the Viking Shear Company, Erie, Pennsylvania.

making these shears. To retain the temper in the blades, a high grade steel is employed. Viking Shears are tempered by a special process. Uniformity is the dominant feature, due to an even heat being applied. The blades are 5½ inches long and ¼ inch thick. They are easily adjusted or removed. The bolts used are all milled from Bessemer steel and screw into the body. In every particular, Viking Shears are made to give service and to last for a long time. For further information, sheet metal contractors should write to the Viking Shear Company, Erie, Pennsylvania.

SAYS AMERICAN ARTISAN IS A VERY VALUABLE HELP IN BUSINESS.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

In renewing my subscription, I wish to say that I find your paper a very valuable help in the business.

Yours truly,

JOHN BOS.

Sheet Metal Works.

Muskegon, Michigan, March 15, 1920.

SEEKS BEST RETINNING METHOD.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

I would like to hear from tinner through your journal, as to the best method for retinning about 500 ice cream cans.

Yours truly,

J. M. PRALL.

Oklahoma City, Oklahoma, March 15, 1920.

NOTES AND QUERIES.**Wire Lawn Fence.**

From Wendt and Teichler, Dundee, Illinois.

Please let us know where we can get wire lawn fence with iron posts.

Ans.—Pittsburgh Steel Company, Pittsburgh, Pennsylvania; Chicago office at 332 South Michigan Avenue; and the Keystone Steel and Wire Company, Peoria, Illinois.

Repairing Auto Radiators.

From M. B. Miles, Clarion, Iowa.

Can you tell me where supplies for auto radiator repair work can be purchased?

Ans.—The F. L. Curfman Manufacturing Company, Maryville, Missouri, make these supplies.

Cleaner Metal for Auto Radiators.

From Butcher's Radiator Shop, Box 68, Chehalis, Washington.

Kindly advise who makes cleaner metal for auto radiators.

Ans.—The Automobile Supply Company, 1335 Michigan Avenue, Chicago, Illinois; Buffalo Specialty Company, Buffalo, New York; and the Gramoline Company, 3 South La Salle Street, Chicago, Illinois.

Wood Turning Lathes.

From Storm, Newlin and Watson, Chrisman, Illinois.

Will you please inform us who sells or jobs wood turning lathes for manual training school work?

Ans.—E. B. Estes and Sons, 364 Fifth Avenue, New York City; Henry J. Duncan, Alpena, Michigan.

Aluminum Rule.

From A. G. Maas, Blue Earth, Minnesota.

I would like to know where I can purchase a four foot folding rule made of aluminum and marked in tenths.

Ans.—The Rustless Rule Company, 9 Lafayette Street, Buffalo, New York, and the Aluminum Goods Manufacturing Company, Manitowoc, Wisconsin, make these rules.

"Capital" Washing Machine.

From C. C. Burscke and Son, Good Thunder, Minnesota.

Please advise who makes the Capital improved water power washing machine.

Ans.—Blackstone Manufacturing Company, Jamestown, New York.

Adjustable Scaffolding Jacks.

From Tony V. Mallack, 113 South Weadock Avenue, Saginaw, Michigan.

Where can I purchase adjustable scaffolding jacks for erecting steel ceilings?

Ans.—S. P. Fallows Company, Boston, Massachusetts.

Hercules Thermostat Heat Regulator.

From Harmon and Zell, 412 Central Avenue, West Duluth, Minnesota.

Please advise who handles the Hercules thermostat heat regulator.

Ans.—Watts Regulator Company, 549 West Washington Boulevard, Chicago, Illinois.

Triplex Lawn Mower.

From Hagen and McCormac, Ames, Iowa.

Will you kindly tell us who makes the Triplex lawn mower for use on golf links or country estates.

Ans.—S. P. Townsend and Company, Orange, New Jersey.

Folding Ironing Board.

From Hagen and McCormac, Ames, Iowa.

Please let us know where we can purchase an ironing board that folds up into a case which is fastened to the wall.

Ans.—Hibbard Spencer Bartlett and Company, 303 North State Street, Chicago, Illinois; Oregon Woodenware Manufacturing Company, Portland, Oregon.

Steel and Brass Angles.

From Dean Specialty Works, San Antonio, Texas.

Kindly advise who makes light weight pressed steel angles and other mouldings, about 1/16 to 3/32 inch thick by 3/4 inch to 2 inch wide inclusive. Also who makes brass angles.

Ans.—The Fischer and Hayes Rope and Steel Company, 741-745 West Van Buren Street, Chicago, Illinois; Joseph T. Ryerson and Company, 2558 West 16th Street, Chicago, Illinois; and Interstate Iron and Steel Company, First National Bank Building, Chicago, Illinois, make steel angles. The American Brass Company, Waterbury, Connecticut; Bridgeport Brass Company, Bridgeport, Connecticut, make brass angles.

White Enameled Steel Sheets.

From Dean Specialty Works, San Antonio, Texas.

We would like to know where to purchase white enameled steel sheets about No. 24 and No. 22 gage.

Ans.—Impervious Metal Corporation, 421 Wood Street, Pittsburgh, Pennsylvania; Vitreous Enameling Company, Grant Avenue, Cleveland, Ohio; Cleveland Metal Products Company, Cleveland, Ohio; Ingram-Richardson Manufacturing Company, Beaver Falls, Pennsylvania.

Incubator Regulators.

From Dean Specialty Works, San Antonio, Texas.

Can you inform us who makes incubator regulators?

Ans.—National Regulator Company, 208 South Jefferson Street, Chicago, Illinois.

Ivoroid.

From C. L. Pemberton, Fairmount, Indiana.

Where can I buy ivoroid for casting reel handles?

Ans.—The Arlington Works (E. I. du Pont de Nemours Company) Wilmington, Delaware.

U. S. Clinker Fork.

From J. C. Moebus, 1752 Oregon Avenue, Butte, Montana.

Please advise who makes the U. S. clinker fork.

Ans.—The United States Wire Mat Company, Decatur, Illinois, makes this clinker fork.

Address of The International Heater Company.

From The Oneida Hardware Company, Incorporated, Oneida, Illinois.

Please give us the address of The International Heater Company.

Ans.—They are located at 1933 Wentworth Avenue, Chicago, Illinois, and Utica, New York.

LOOK AFTER THE LITTLE THINGS.

Look after the little things and the big things will look after themselves. So runs the old, and therefore, truthful, adage. The dealer who concentrates his efforts in getting the small change will find that the dollars will come of themselves.

WEEKLY REPORT OF TRADE AND THE MARKETS

DELIVERIES OF RAW MATERIAL ARE BACKWARD IN SEVERAL STEEL MILL DISTRICTS.

There has been some improvement in transportation service since the return of the railroads to private ownership, but it is still far from perfect, and many of the mill districts are still reporting difficulty in securing deliveries of raw materials as well as trouble in getting empties to ship out finished products. The finished steel is piled in the warehouses of the mills, while consumers are forced to bide their patience, meanwhile holding up their projects.

Reports indicate that consumers as a class do not seem so urgent in asking for deliveries of steel, but inasmuch as deliveries are being parceled out and any amount of urging is useless, this development means a more philosophical attitude on the part of the trade.

Some surprise is expressed in the trade at the reserved rate at which the railroads are buying steel, as it had been anticipated that the roads would enter the steel market with a rush, following the return to private ownership. There is no doubt that the railroads will need tremendous quantities of steel, as buying for the past few years has been below the actual rate of requirements. Needs of the carriers will run all the way from rails to locomotives. In this latter class, the demand is already showing a tremendous improvement. No special arrangements have been made to give any sort of priority to the requirements of the roads, although it is generally admitted that the best policy in the long run would be to start the roads off right and thus re-establish transportation facilities at normal again.

STEEL

Notwithstanding the several handicaps which still obtain in the steel industry, the rate of production is slowly increasing. Many consumers are following the lead of the automobile makers in ordering steel, the price to be adjusted at time of delivery. Prices are firm on all hands and while the leading interest is still quoting the lower basis, this producer is booked up well high solid for the remainder of the current season and this will naturally throw considerable business to the independents who are generally asking any price the traffic will bear.

Steel producers in most lines continue sold up for several months ahead on cold rolled steel bars, cold rolled strip steel, hot rolled strip steel, wire products, wire rods, sheets, plates, iron and steel bars and in fact in every line of finished and semi-finished steel products. In iron and steel bars there is practically a famine of supplies, especially steel. Consumers are offering heavy premiums for deliveries of many products without much success.

Dealers report a very active inquiry for wire rods, this coming from foreign and domestic sources but it is impossible to accommodate this inquiry in full, owing to the scarcity of supplies. Sheet mills are filled up for a long time ahead but there are several other heavy orders hanging over the market and it is likely that the buyers in these cases will experience considerable difficulty placing their business at any price.

COPPER.

No change has occurred in the sluggish condition of the copper market. Experts attribute it to the overstrained state of the credit situation. A prominent Boston authority reasons that in all likelihood some of the small producers or custom smelting companies have been unable either to raise or renew loans and thus are forced to throw their copper upon the market. The action of some of the large producers in reducing and passing dividend payments may reflect a determination to keep their finances in such shape that it will be unnecessary for them to make sales of copper at these low prices.

Ordinarily copper is not a commodity that the producers go out and sell, but one that the consumers come to the producers and buy. There have been very few times in the history of the industry when copper producers felt called upon to force their product upon the market. It is the custom for producers to wait until consumers are in a position where they must buy.

The new revolution in Germany has darkened the outlook for early resumption of copper exports to that country. But in nearly every other part of the world, construction programs are being drawn up and adopted which promise to create a very heavy demand for copper before this year is half gone. When the demand finally materializes the existing stocks are unlikely to be sufficiently large to satisfy it, and it will be a matter of three or four months thereafter before there can be any material increase in the production of refined and ready to use copper.

TIN.

Under the constant change in sterling it is exceedingly difficult for consumers to operate in the domestic tin market, and as buying is wholly a matter of speculation only dealers participate in the trading. When speculation has run its course the market will return to more stable conditions and enable consumers to make disposition for the future.

There is considerable buying interest on the part of dealers but chiefly in the early shipments, like February-March from the East Indies or for delivery from steamers already afloat. In other words, the nearby positions are in demand at over the spot price

and this may possibly indicate a curtailment in shipments from the East Indies.

LEAD.

The lead market remains firm under continued scarcity of the metal for nearby delivery. The production of lead is still far below normal capacity. Some producers report as high as 90 per cent of normal, but many are not doing nearly as well, and all are as yet obliged to restrict themselves in their offerings in the attempt to accommodate as nearly as possible their regular trade. The demand particularly from white lead manufacturers is still very good.

It is reported that the shipments from Mexico have been averaging about 5,000 tons for some months past, about half of what may be regarded as the output under favorable conditions. But in spite of the high price, the internal Mexican disorders have curtailed production, and there are new reports of fresh trouble of the same sort. The producers are unable at present to make any further offers of lead from Mexican ores for several months to come.

SOLDER.

The following prices for solder are now in force in the Chicago market: Warranted, 50-50, per pound, 40.00 cents; Commercial, 45-55, per pound, 37.30 cents; and Plumbers', per pound, 34.60 cents.

ZINC.

A decline of £1 in the London quotations the early part of the week caused a weaker tendency in the domestic zinc market. Producers show no anxiety to sell at prevailing prices. The zinc industry has not fully recovered from the adverse conditions of the winter and there is no surplus of zinc for current buying.

TIN PLATE.

The Chicago market for tin plate registered an increase of prices in all positions. First quality bright tin plates IC 14x20 per box of 112 sheets have advanced from \$14.15 to \$15.80 per box; IX 14x20 first quality bright tin plates have increased from \$16.05 to \$17.75 per box of 112 sheets; IXX 14x20 first quality bright tin plates have gone up from \$17.70 to \$19.45 per box of 112 sheets; IXXX 14x20 first quality bright tin plates have advanced from \$19.10 to \$20.90 per box of 112 sheets; IXXXX 14x20 first quality bright tin plates have increased in price from \$20.30 to \$22.15 per box of 112 sheets. The larger size of first quality bright tin plates, namely, the 20x28, have undergone a corresponding increase of price, amounting to \$3.30 on the IC 20x28, \$3.40 on the IX 20x28, \$3.50 on the IXX 20x28, \$3.60 on the IXXX 20x28, and \$3.60 on the IXXXX 20x28.

Coke plates have also advanced in price, the 20x28 plates 180 pounds going from \$18.30 to \$19.30, the 20x28 coke plates 200 pounds from \$18.50 to \$19.50; the IC 20x28 coke plates 214 pounds from \$18.90 to \$19.90; and the IX 20x28 coke plates 270 pounds from \$20.80 to \$22.30.

SHEETS.

Because of insufficient shipping facilities, sheet-makers in the Pittsburgh district are piling considerably more finished material than they are shipping. Practically all of the mills are so heavily loaded with business that they are not in a position to accept any more for prompt delivery. No formal opening of books by independent companies for the third quarter appears probable in view of the present flood of business and the fact that so little progress has been made thus far this year in cutting down old obligations. It is hardly likely that books will be cleared until well into the third quarter and bookings for that period are likely to be by allotment.

OLD METAL.

Wholesale quotations in the Chicago district which may be considered nominal are as follows: Old steel axles, \$33.00 to \$35.00; old iron axles, \$37.00 to \$38.00; steel springs, \$25.50 to \$36.50; No. 1 wrought iron, \$26.50 to \$27.00; No. 1 cast, \$37.50 to \$38.50, all net tons. Prices for non-ferrous metals are as follows, per pound: Light copper, 14 cents; light brass, 9 cents; lead, 6½ cents; zinc, 5½ cents; cast aluminum, 22½ cents.

PIG IRON.

Furnaces are not pressing any iron for sale and are holding firm to the established quotations. Whatever iron is offered at lower prices emanates from brokers who have resale iron on their hands and may be forced by money conditions to liquidate.

According to the market report of Rogers, Brown and Company of Cincinnati, Ohio, developments of the past week would indicate that the termination of the present lull in the pig iron buying is in sight. It will be recalled that some weeks before the Central West noted and curtailment of the recent phenomenal buying movement, the East began slowing down, the contagion gradually spreading westward until it became epidemic throughout the country. This period of rest and reflection has not been unwelcome to either the buyers or sellers, but reports indicate that interest is again being manifested in the East. This is probably a harbinger of another active buying movement in that section which will quite naturally spread westward, following the progress of the former lull.

A feature reported from New York is, that many buyers find that they are not covered for all they will require this year due to increased melt, and while few are now purchasing additional tonnages for forward delivery, it is interesting to note that there remains a large tonnage still uncovered.

The general situation throughout the country is sound, although not exciting. Orders and inquiries are out for quantities ranging from carload lots up to 9,000 and 10,000 tons, for both prompt and extended delivery. From the producers point of view, the week has been more encouraging, particularly as there has been a slight improvement in the matter of car supply. In some districts, shipments were the largest made during any week of this year.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

| METALS. | | LEAD | | AUGERS | | BEATERS. | |
|--|--|---|--|---|--|---|--|
| PIG IRON. | | American Pig.....10 00 Bar.....10 25 | | Boring Machine.....60% Irwin's.....25% | | Carpet. Per doz. No. 7 Tinned Spring Wire... \$1 10 No. 8 Spring Wire coppered... 1 50 No. 9 Preston..... 1 75 | |
| Basic.....\$43 00 Southern Fdy. No. 2..... 46 60 Lake Sup. Charcoal..... 57 50-60 50 Malleable..... 43 50 | | Sheet. Full coils.....per 100 lbs. \$12 65 Cut coils.....per 100 lbs. 12 90 | | Carpenter's Nut.....50% | | Egg. Per doz. No. 50 Imp. Dover.....\$ 1 10 No. 102 " " tinned... 1 35 No. 150 " " hotel... 2 10 No. 10 Heavy hotel tinned... 2 10 No. 13 " " " " 3 30 No. 15 " " " " 3 60 No. 18 " " " " 4 50 | |
| FIRST QUALITY BRIGHT TIN PLATES. | | TIN. Pig tin.....68½c Bar tin.....70 c | | Hollow. Bonney's.....per doz. 30 00 | | Hand. 8 9 10 12 Per doz.\$11 50 13 00 14 75 18 00 | |
| IC 14x20.....112 sheets \$15 80 IX 14x20..... 17 75 IXX 14x20..... 19 45 IXXX 14x20..... 20 90 IXXXX 14x20..... 22 15 IC 20x28..... 31 60 IX 20x28..... 35 50 IXX 20x28..... 38 90 IXXX 20x28..... 41 80 IXXXX 20x28..... 44 30 | | HARDWARE. | | Post Hole. Iwan's Post Hole and Well....30% Vaughan's, 4 to 9-in...per doz.\$14 00 | | Moulders'. 12-inch.....Per doz. 20 00 | |
| COKE PLATES. | | ADZES. | | AWLS. | | BELLS. | |
| Cokes, 180 lbs..... 20x28 \$19 30 Cokes, 200 lbs..... 20x28 19 50 Cokes, 214 lbs.....IC 20x28 19 90 Cokes, 270 lbs.....IX 20x28 22 30 | | Carpenters'. Plumbs.....Net | | Brad. No. 3 Handled.....per doz. \$0 65 No. 1050 Handled... " 1 40 Shouldered, assorted 1 to 4, ".....per gro. 4 00 Patent asst'd, 1 to 4.. " 85 | | Call. 3-inch Nickeled Rotary Bell, Bronzed base.....per doz. \$5 50 | |
| BLUE ANNEALED SHEETS. | | AMMUNITION. | | Harness. Common..... " 1 05 Patent..... " 1 00 | | Cow. Kentucky.....30% | |
| No. 10.....per 100 lbs. \$5 27 No. 12.....per 100 lbs. 5 32 No. 14.....per 100 lbs. 5 37 No. 16.....per 100 lbs. 5 45 | | Peters Cartridges. Semi-Smokeless.....Less 18% Smokeless.....Less 18% | | Peg. Shouldered..... " 1 60 Patented..... " 75 | | Door. Per doz. New Departure Automatic... \$ 7 50 | |
| ONE PASS COLD ROLLED BLACK. | | Shells, Loaded, Peters. Loaded with Black Powder. Less 15% Loaded with Smokeless Powder, medium grades.....Less 15% Loaded with Smokeless Powder, high grade.....Less 15% | | Scratch. No. 1S, socket hand'ld.per doz. 2 50 No. 344 Goodell-Pratt, List, less.....35-40% No. 7 Stanley " 2 25 | | Rotary. 3 -in. Old Copper Bell..... 6 00 3 -in. Old Copper Bell, fancy. 8 00 3 -in. Nickeled Steel Bell.... 6 00 3½-in. Nickeled Steel Bell.... 6 50 | |
| No. 18-20.....per 100 lbs. \$6 80 No. 22-24.....per 100 lbs. 6 85 No. 26.....per 100 lbs. 6 90 No. 27.....per 100 lbs. 6 95 No. 28.....per 100 lbs. 7 00 No. 29.....per 100 lbs. 7 10 | | Winchester. Smokeless Repeater Grade. Less 15% Smokeless Luger Grade... Less 15% Black Powder.....Less 15% | | AXES. | | Hand. Hand Bell polished .List plus 5% White Metal..... " 5% Nickel Plated..... " 5% Swiss..... " 10% | |
| GALVANIZED. | | U. M. C. Nitro Club.....10&5% Arrow.....10&5% New Club.....10&5% | | First Quality, Single Bitted, 3 to 4 lb.....per doz. 15 50 First Quality, Double Bitted,per doz. 20 50 | | Miscellaneous. Church and School, steel alloys...30% Farm, lbs... 40 50 75 100 Each.....\$3 00 3 75 5 50 7 25 | |
| No. 16.....per 100 lbs. \$8 25 No. 18-20.....per 100 lbs. 8 40 No. 22-24.....per 100 lbs. 8 55 No. 26.....per 100 lbs. 8 70 No. 27.....per 100 lbs. 8 85 No. 28.....per 100 lbs. 9 00 No. 30.....per 100 lbs. 9 50 | | Win Waas—per 1000. Winchester 7-8 gauge...10&7½% " 9-10 gauge...10&7½% " 11-28 gauge...10&7½% | | BROAD. | | BEVELS, TEE | |
| WELLSVILLE POLISHED STEEL. | | Powder. Each DuPont's Sporting, kegs...\$11 25 " " ½ kegs... 3 10 DuPont's Canisters, 1-lb.... 56 " Smokeless, drums... 43 50 " " kegs... 22 00 " " ½-kegs... 5 75 " " canisters... 1 00 | | Plumbs, West, Pat.....List " Can. Pat.....\$69 00 Firemen's (handled),per doz. 21 00 | | Stanley's rosewood handle, new list.....Nets Stanley's iron handle.....Nets | |
| No. 18-20.....per 100 lbs. \$7 10 No. 22-24.....per 100 lbs. 7 20 No. 26.....per 100 lbs. 7 30 No. 27.....per 100 lbs. 7 40 No. 28.....per 100 lbs. 7 50 | | L. & R. Orange, Extra Sporting kegs.....11 25 L. & R. Orange, Extra Sporting ½-kegs..... 5 90 L. & R. Orange, Extra Sporting ¼-kegs..... 3 10 L. & R. Orange, Extra Sporting 1 lb. canisters..... 56 L. & R. Orange, Extra Sporting ½ lb. canisters..... 32 L. & R. Orange, Extra Sporting ¼ lb. canisters..... 22 | | Single Bitted (without handles). Warren Silver Steel.. on application Warren Blue Finished. " Matchless Red Pole.....\$11 50 | | BINDING CLOTH. | |
| KEYSTONE HAMMERED POLISHED STEEL. | | Hercules "E.C." and "Infallible" 50 can drums..... 43 50 Hercules "E. C." kegs..... 22 50 Hercules "E. C." ½-kegs..... 11 25 Hercules "Infallible," 25 can drums..... 22 00 Hercules "Infallible," 10 can drums..... 9 00 Hercules "E. C." ¼-kegs..... 5 75 Hercules "E.C." and "Infallible" canisters..... 1 00 Hercules W. A. .30 Cal. Rifle, canisters..... 1 25 Hercules Lightning Rifle, canisters..... 1 25 Hercules Sharpshooter Rifle, canisters..... 1 25 Hercules Unique Rifle, canisters 1 50 Hercules Bullseye Revolver, canisters..... 1 00 | | Double Bitted (without handles). Warren's Natl. Blue, 3½ to 4½ lb..... Prices on application The above prices on axes of 3 to 4 lbs. are the base prices. | | Zincd.....55% Brass.....40% Brass, plated.....60% | |
| Discontinued. New product will be announced later. | | ANVILS. Solid Wrought.....23 & 23½ per lb. | | BAGS, PAPER NAIL. | | BITS. | |
| BAR SOLDER. | | ASBESTOS. Board and Paper, up to 1/16" 17c per lb. Thicker.....18c per lb. | | Pounds..... 10 16 20 25 Per 1,000...\$5 00 6 50 7 50 9 00 | | Auger. Jennings Pattern.....25% Ford Car.....List plus 5% Ford's Ship.....35% Irwin.....20% Russell Jennings.....33½% Clark's Expansive.....3% Steer's "Small list, \$22 00...5% " Large " \$26 00...5% Irwin Car.....35% Ford's Ship Auger pattern Car.....List plus 5% Center.....10% | |
| Warranted, 50-50... per 100 lbs. 40 00 Commercial, 45-55..... " 37 30 Plumbers'..... " 34 60 | | BALANCES, SPRING. | | BARS, CROW. | | Countersink. | |
| ZINC. | | BASKETS. | | Pinch or Wedge Point, per cwt...\$8 50 | | No. 18 Wheeler's...per doz. \$2 25 No. 20 " " " 3 00 American Snailhead.. " 1 75 " Rose " " 2 00 " Flat..... " 1 40 Mahew's " " 1 60 " Snail..... " 1 90 | |
| In slabs.....9½c | | Small Willow.....per doz. 15 00 Medium Willow..... " 17 00 Large Willow..... " 20 00 | | DOVEL. | | Gimlet. | |
| SHEET ZINC. | | Galvanized Steel. ½ bu. 1 bu. 1½ bu. Per doz.....\$11 50 \$17 00 \$22 00 | | Pusell Jennings.....20% | | Standard Double Cut. Doz. \$1 10—\$1 60 | |
| Cash lots.....14 c Less than cash lots.....14½-14¾c | | REAMER. | | Standard Square.....Doz. 2 50 American Octagon... | | Screw Driver. | |
| COPPER. | | | | No. 1 Common..... 20 No. 26 Stanley..... 75 | | | |
| Copper Sheet, base.....29½c | | | | | | | |

BLACKING, STOVE. (See Polish)
BLADES, SAW.
Butchers'.
 Standard, 1 & 1 1/2-in. Net
 Clock Spring. "
 Star. "
'ack.
 Atkins. 5%
 Star. Nets

Wood.
 Diastion
 Nos. 6 66 26
 \$8 00 \$8 50 \$8 00
 Atkins
 Nos. 2 14 18
 \$3 85 \$6 50 \$4 75

BLOCKS.

Snatch.
 Wooden. Plus 10%

Tackle.
 Iron Strapped. Plus 10%

BOARDS.

Store.
 Wabash Crystal. Net Prices
 Wabash Oriental. "
 Wabash Mosaic. "
 Wabash Delft Enameled. "
 Wabash Art Inlay. "

Wash.
 No. 760, Banner Globe, (single)
 per doz. \$5 25
 No. 652, Banner Globe, (single)
 per doz. 6 75
 No. 801, Brass King. 8 25
 No. 860, Single—Plain Pump 6 25

BOLTS.

Carriage, Machine, etc.
 Carriage, 1/2x6 and sizes smaller.
 and shorter. 30%

Carriage, sizes larger and longer
 than 1/2x6. 20%
 Machine, 1/4x4 and sizes smaller
 and shorter. 35-5%
 Machine, sizes larger and long-
 er than 1/4x4. 25-5%
 Stove. 70%
 Tire. 60%

Mortise, Door.
 Gem, iron. 5%
 Gem, bronze plated. 5%

Barrel.
 Cast. Nets
 Wrought. "
 Wrought, bronzed. "

'lash.
 Wrought. "

Spring.
 Wrought. "
 Wrought, heavy. "

Square.
 Wrought. "

BORERS.

Angular.
 Miller's Falls. per doz. \$23 00
 Sill borer, No. 51. 34 00
 " " 52. 39 50

Bug.
 Enterprise Mfg. Co.'s No. 1. 10%
 " " No. 2. 10%

BOXES.

Mail, No. 2 4 10
 Per doz. \$18 00 23 00 29 00

Wire.
 Stanley's. Net Prices
 Stearns, No. 2. per doz. \$30 00

BRACES.

Pray's Genuine Spofford's. 20&10%
 No. 08. \$7 50
 " No. 010. 8 00

BRACKETS.

Hay Rack.
 Wenselmann's No. 1, per doz.
 sets. \$18 00
 Wenselmann's No. 2, per doz.
 sets. 19 20
Shelf.
 Wrought Steel. 40%

Well.
 Oak, Wrought Iron Riveted
 Top Ears. per doz. \$8 00

BURRS, RIVETING.

Copper Burrs only. 25% above list
 Tinner's Iron Burrs only. 30%

BUTTS.

Cast Iron. 7 1/2%
 Wrought Brass (New List). Plus 5%
 Wrought Steel, Bright. 40%
 Wrought Steel, Japanned. Net prices

CALIPERS.

Double. Nets
 Inside and Outside. "
 Wing. "

CALKS.

Logger's Boot.
 (Lufkin R. Co.'s), per M. \$7 00
Toe.
 Blunt and medium, 1 prong,
 per 100 lbs. \$6 20
 Sharp, 1 prong, per 100 lbs. 6 70

CANS.

Milk.
 Elgin.
 Gals. 5 8 10
 Each. \$4 00 \$5 15 \$5 15
 Iowa Pattern.
 Gals. 5 8 10
 Each. \$4 00 \$5 15 \$5 15

CAN OPENERS.

See Openers.

CAPS, GUN.

See Ammunition.

CARPET STRETCHERS.

See Stretchers.

CARRIERS.

Hay.
 Diamond, Regular. each, Nets
 Diamond, Sling. " "

CARTRIDGES.

See Ammunition.

CASTERS.

Standard—Ball Bearing. 50&10%
 Bed. 40%

Common Plate.
 Brass Wheel. 15%
 Iron and porcelain wheels, new
 list. 50%
 Philadelphia Plate, new list. 50%
 Martin's. 40%

CATCHERS, GRASS.

No. 160S, per doz. \$12 25
 No. 165S, " 14 01

CEMENT, FURNACE.

American Seal, 5 lb. cans, net \$0 45
 " " 10 lb. cans, " 90
 " " 25 lb. cans, " 1 87
 Pecora, 5 lb. cans. 45
 " 10 lb. cans. 90
 " 25 lb. cans. 1 87

CHAIN AND CHAINS.

Breast Chains.
 Doubleslack. doz. pairs, \$8 50
 With Covert Snaps " 5 80
 With Slide. " 5 00
 Without Slide. " 4 60

Picture Chains.

Light Brass, 3 ft. per doz. \$1 25
 Heavy Brass, 3 ft. " 1 75

Sash Chain.

(Morton's)
 Steel, per 100 ft.
 0. \$2 50
 2. 3 10
 1. 3 60

Champion Metal.

0R. 5 40
 2R. 5 60
 1R. 7 75

Champion Metal—Extra Heavy.
 1H. 9 50

Cable Sash Chains.

Steel. List Net Plus 15%

CHALK, CARPENTERS'

Blue. per gro. \$1 40
 Red. " 1 40
 White. " 1 25
 Common White School
 Crayon. 25c

CHARCOAL.

In bags. per bag \$1.70

CHECKS, DOOR.

Blount. Net list
 Corbin. "

CHIMNEY TOPS.

Iwan's Volcano. 35%

CHISELS.

Box.
 Inches. 1 1/2 14
 Round, per doz. \$5 25 5 75
 Flat, per doz. 7 25 8 25

Cold.

Good quality, 1 in. and
 larger. Nets
 Smaller size, per doz. Nets
Socket, Firmer.
 Ohio. Price on Application
Socket, Framing.
 Ohio. Price on Application
 Tanged, Firmer.—Barton's.
 With handles. Net list
 Choppers, See Cutters, Meat.

CHUCKS, DRILL.

Goodell's, for Goodell's Screw
 Drivers. List less 35-40%
 Yankee, for Yankee Screw
 Drivers. 6 00

CHURNS.

Anti-Bent Wood,
 Gal. 5 7 10
 Each. \$3 90 4 60 4 85
 Belle, Barrel. 65&7 1/2%
 Common Dash,
 Gal. 5 7
 Per doz. 17 00 19 00

CLAMPS.

Adjustable.
 Martin's. 30%
 No. 63, Screw. 20%

Cabinet.
 Screw. 20%

Carpenters'.
 Steel Bar. List price plus 25%

Carriage Makers'.
 2 1/2" per doz. \$7 00
 5" 14 00
 8" 28 00
 12" 46 00

Quilt Frame.

No. 30 Ball and Socket, 2 1/2"
 head. per gross \$11 25
 No. 50, Ball and Socket, 3 1/2"
 head. per gross 12 25

Hoss.
 Sherman's, brass, 1-in. per doz. 48c
 Double, brass, 1-in. 1 20

Saw Filers.

Wentworth's, No. 1, \$12.50; No. 2,
 \$18.25. No. 3, \$16.25.

CLAWS, TACK.

Wood hdl. No. 10. per doz. \$0 95
 Forged steel, wood hdl. \$1 75
 Solid steel. 2 40
 Giant. 40

CLEANERS.

Drain.
 Iwan's Adjustable. 40%
 Iwan's Stationary. 30%

Pol.
 Wire. per doz. \$0 75
Side-Walk.
 Steel. per doz., Net prices

CLEAVERS.

Family.
 Beatty's, inch 7 8 9 10
 Per doz. \$27 00 29 00 33 00 36 00

CLEAVISES.

Malleable. 10c lb.

CLIPPERS.

Bolt. \$2 25&6 00

CLIPS.

Axle. 65&5%
Damper.
 Standard. per doz. 70c
 Troy. 38c
 Hame. 50c

CLOTH.

Emery.
 Star. New Prices
 B. & A. "
Hardware, Wire—
 Full rolls (100 ft.) Prices on
 application
 12 Mesh, galvanized. "
 14 " " " " "
 16 " " " " "
 18 " " " " "
Screen Wire. Prices on application
 12 mesh, painted, per 100 sq. ft.

COLLARS, STOVE PIPE.

Lacquered. Inches 5 6 7
 Fancy pattern,
 per doz. 80c 85c \$1 15

COMPASSES.

Carpenters'. 15%

COPPER—See Metals.**COPPERS—Soldering.**

Pointed Roofing.
 3 lb. and heav. per lb. 37c
 2 1/2 lb. 38c
 2 lb. 37c
 1 1/2 lb. 40c
 1 lb. 43c

CORD.

Picture.
 White Wire. 60&5%

Sash.
 Sampson Spot, No. 7, per doz. \$24 50
 Sampson Spot, No. 8, per doz. \$29 40

CORKSCREWS.

Walker's. 30%
 Williamson's Regular. 35&11%
 Williamson's Forged Worm. 40%

COTTERS, SPRING.

All sizes (new list) 80%

COUPLINGS, HOSE.

Brass. per doz. \$2-25

COVERS, WAGON—See Tents.**CRADLES, GRAIN.**

Morgan's Grapevine. per doz. \$45 00

| | | | | | | | | | | | |
|---------------------------------------|---------------|--|---|------|--|--|--|--|--|--|--|
| CRAYONS—See Chalk. | | | ELBOWS—Conductor Pipe. | | | WOOD PAIS. | | | HANGERS. | | |
| CUTTERS | | | Galvanized Steel, Tin and Terne; Round Corrugated. | | | Frazer's, 15 lb. \$1.00; 25 lb. \$1.50 each Hub Lightning, 15 lb. 90c; 25 lb. \$1.21 each. | | | Barn Door. | | |
| Glass. | | | Size. | Doz. | | Tin Cans. | | | U. S. Rolled Bearing.....12½% | | |
| Woodward..... | 40% | | 2-inch..... | 60% | | Frazer's | | | Matchless.....12½% | | |
| Meal. | | | 3-inch..... | 60% | | 1½ lb. per doz.....\$1 75 | | | Warehouse Tandem, No. 44.....33½% | | |
| Enterprise—Nos. 5 10 12 | | | 4-inch..... | 60% | | 3 lb. per doz.....3 25 | | | Conductor P. | | |
| Each \$2 50 \$4 25 \$3 75 | | | 5-inch..... | 60% | | | | | Iwan's Perfection.....45% | | |
| Nos. 22 32 | | | 6-inch..... | 60% | | | | | Ease Trough. | | |
| " 6 50 8 50 | | | EMERY, TURKISH. | | | All sizes, 5" or smaller, | | | | | |
| Pipe. | | | Size.....1-lb. 5-lb. 10-lb. | | | GRINDSTONES. | | | All sizes, larger than 5", | | |
| Saunders', No. 1 2 3 | | | Per pound.....18c 14c 13c | | | Family. | | |per gross. \$3 80 Net | | |
| Each.....\$1 85 2 75 6 75 | | | | | | Inches.. 7 8 10 12 | | | All sizes, larger than 5", | | |
| Slaw and Kraut. | Per doz. | | | | | Per doz..20 50 21 75 26 25 30 50 | | |per gross. 5 00 " | | |
| 4-knife Kraut..... | \$20 00-55 00 | | | | | Loose. | | | Garage Door. | | |
| 3-knife Kraut, 8x27 in. 13 00-18 00 | | | | | | Per ton..... Price on application | | | Right Angle.....50&10% | | |
| 1-knife Slaw..... | 2 50 | | | | | Mounted. | | | Sliding Folding.....50% | | |
| 2-knife Slaw..... | 3 00 | | | | | Ball Bearing..... 1 2 3 | | | Receding.....50% | | |
| Washer..... | 11 00 | | | | | Each.....\$4 75 5 00 5 25 | | | Parlor Door. | | |
| DAMPERS, STOVE PIPE. | | | EYES. | | | GUN WADS. | | | Acme.....per set, \$3 75 | | |
| Ideal | | | Bright Wire Screw—See Ooods, B. W. | | | (See Ammunition). | | | Ives' Improved..... " 3 40 | | |
| 3"..... | \$1 00 | | Drifting Pick.....60, 10&5% | | | GUNS. | | | Lane's Standard..... " 3 50 | | |
| 4"..... | 1 05 | | Hooks and Eyes— | | | Iver Johnson Champion Single | | | Lane's New Model... " 3 10 | | |
| 5"..... | 1 15 | | Brass, 1½" No. 60...per gross, \$3 50 | | | Barrel Shot Guns.....Net Prices | | | Le Roy Noiseless.....40&10% | | |
| 6"..... | 1 25 | | Iron " " 50... " 1 60 | | | Double Barrel, Hammerless. " | | | Richards.....25% | | |
| 7"..... | 2 20 | | FASTENERS, STORM SASH. | | | | | | Advance.....40&10% | | |
| 8"..... | 3 75 | | Shroeder's.....per doz. \$1 50 | | | | | | HASPS. | | |
| 10"..... | 6 00 | | Sensible..... " 3 00 | | | | | | Hinge, Wrought.... Add 50% to list. | | |
| DIES AND STOCKS. | | | FILES AND RASPS. | | | | | | With Staples—See Staples. | | |
| Discount..... | New List | | Delta | | | | | | HATCHETS. | | |
| DIGGERS. | | | Delta.....30% | | | | | | Crescent.....50% | | |
| Post Hole. | | | Swiss.....List plus 25% | | | | | | Cast Claw.....per doz. \$1 50@1 85 | | |
| Eureka.....per doz. \$14 50 | | | Utility....." net. | | | | | | Cast Shingling... " 1 50@1 85 | | |
| Iwan's Split Handle (Eureka) | 15 00 | | Nicholson's— | | | | | | Germantown.....7½% | | |
| 4-ft. Handle.....per doz. 13 00 | | | American.....60% | | | | | | HAY KNIVES. | | |
| 7-ft. ".....20 00 | | | Arcade.....50-10-7½% | | | | | | See Knives. | | |
| Iwan's Perfection (Atlas) " | 16 50 | | Black Diamond.....50&5% | | | | | | HAY RACK BRACKETS | | |
| Iwan's Hercules pattern " | 18 00 | | Eagle.....50-10-7½% | | | | | | Wenzelman's No. 1 per doz. sets, \$18 00 | | |
| See also Augers—Post Hole. | | | Great Western.....50-10-7½% | | | | | | Wenzelman's No. 2 " " 19 20 | | |
| Dividers, Wing.....25% | | | Kearney & Foot.....50-10-7½% | | | | | | HINGES. | | |
| DOOR CHECKS—See Checks. | | | McClellan.....50-10-7½% | | | | | | Blind. | | |
| DOORS, SCREEN. | | | Nicholson brand.....50&7½% | | | | | | Clark's Gravity | | |
| 1-in. 4-panel, painted.....Net Prices | | | J. Barton Smith.....50&2½% | | | | | | No. 1.....per doz. sets, \$2 25 | | |
| 1-in. 4-panel, painted....." | | | X-F Swiss Pattern.....Net list. | | | | | | No. 3....." " 5 75 | | |
| 1-in. 3-panel, natural pine, | | | Simonds'.....50% | | | | | | <i>Gate.</i> | | |
| fancy....." | | | Diston's.....50&10% | | | | | | Clark's..... 2 3 | | |
| DOOR HANGERS—See Hangers. | | | Heller's.....60&10% | | | | | | Hgs & Ltch, doz. \$5 50 7 00 9 75 | | |
| | | | Simonds'.....50% | | | | | | Hinges only " 4 75 5 50 8 00 | | |
| | | | Diston's.....50&10% | | | | | | Latches only. 1 90 1 90 | | |
| | | | Heller's.....60&10% | | | | | | Screen Door. | | |
| | | | Simonds'.....50% | | | | | | Cast Iron.....gross \$10 00 | | |
| | | | Diston's.....50&10% | | | | | | Steel..... " 7 00 | | |
| | | | Heller's.....60&10% | | | | | | Spring. | | |
| | | | Simonds'.....50% | | | | | | Chicago.....Add 12½% to list. | | |
| | | | Diston's.....50&10% | | | | | | Columbia Dbl. Acting...40&10&5% | | |
| | | | Heller's.....60&10% | | | | | | Gem.....25% | | |
| | | | Simonds'.....50% | | | | | | Ideal Detachable...per gro. \$11 00 | | |
| | | | Diston's.....50&10% | | | | | | Matchless.....40% | | |
| | | | Heller's.....60&10% | | | | | | New Idea.....per gro. \$7 20 | | |
| | | | Simonds'.....50% | | | | | | Oxford.....20% | | |
| | | | Diston's.....50&10% | | | | | | Wrought Iron. | | |
| | | | Heller's.....60&10% | | | | | | New Lists..... | | |
| | | | Simonds'.....50% | | | | | | Light Strap Hinges.....5&5% | | |
| | | | Diston's.....50&10% | | | | | | Heavy Strap Hinges.....20&7½% | | |
| | | | Heller's.....60&10% | | | | | | Light T Hinges.....List plus 5% | | |
| | | | Simonds'.....50% | | | | | | Heavy T Hinges.....List plus 4½% | | |
| | | | Diston's.....50&10% | | | | | | Extra Heavy T Hinges.....15&5% | | |
| | | | Heller's.....60&10% | | | | | | Screw Hook and Strap. | | |
| | | | Simonds'.....50% | | | | | | 6 to 12 in.per 100 lbs. \$7 75 | | |
| | | | Diston's.....50&10% | | | | | | 14 to 20 in. " 7 50 | | |
| | | | Heller's.....60&10% | | | | | | 22 to 36 in. " 7 25 | | |
| | | | Simonds'.....50% | | | | | | Screw Hook and Eye. | | |
| | | | Diston's.....50&10% | | | | | | ½ in.per doz. pair \$2 60 | | |
| | | | Heller's.....60&10% | | | | | | ¾ in. " 3 50 | | |
| | | | Simonds'.....50% | | | | | | ¾ in. " 5 00 | | |
| | | | Diston's.....50&10% | | | | | | HOES. | | |
| | | | Heller's.....60&10% | | | | | | Garden.....Net | | |
| | | | Simonds'.....50% | | | | | | Grub. | | |
| | | | Diston's.....50&10% | | | | | | Extra.....New prices | | |
| | | | Heller's.....60&10% | | | | | | Hazel.....per doz. New prices | | |
| | | | Simonds'.....50% | | | | | | Ladies' and Boys'.....New prices | | |
| | | | Diston's.....50&10% | | | | | | Mortar.....New prices | | |
| | | | Heller's.....60&10% | | | | | | Planter's Eye.....New prices | | |
| | | | Simonds'.....50% | | | | | | Weed.....New prices | | |
| | | | Diston's.....50&10% | | | | | | HOOKS. | | |
| | | | Heller's.....60&10% | | | | | | Awning, No. 60.....per gro. 50% | | |
| | | | Simonds'.....50% | | | | | | Bell. | | |
| | | | Diston's.....50&10% | | | | | | Brown's.....70&5% | | |
| | | | Heller's.....60&10% | | | | | | Jones'.....6&5% | | |
| | | | Simonds'.....50% | | | | | | Bench. | | |
| | | | Diston's.....50&10% | | | | | | See Stops, Bench. | | |
| | | | Heller's.....60&10% | | | | | | | | |
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| | | | Heller's.....60&10% | | | | | | | | |
| | | | Simonds'.....50% | | | | | | | | |
| | | | Diston's.....50&10% | | | | | | | | |

Box.

Inch..... 5 7 10 12

Per doz.....\$2 50 2 75 3 25 3 85

Bush.

Common Axe Handle, per doz.\$22 00

Chain.

Inch..... 1 1/4 1 1/2 1 3/4 2

Pr 100 \$7 60-8 10 9 75 11 50 12 60

Clothes Line.

Japanned.....per doz.48c @ 1 40

Galvanized....." 75c @ 2 50

Coal and Hat.

Common Wire.....per gro. 1 25-1 65

Conductor.

Iwan's Tinned Sickle.....List.

Corn.

Common, riveted, painted red.....per doz. Nets

Little Giant....." "

Gale.

See Goods, Bright Wire.

Grass.

Common Nos. 1 3 5 7

Per doz.....\$4 50 3 50 3 75 3 25

Hammock.

With plate.....per doz. 1 10

With screw....." 1 00

Lambrequin, or Drapery, per gro. .30c

Picture.....50% @ 50&10%

Potato and Manure.....Nets

Screw.

Brass.....70%

(See Goods, Bright Wire.)

Seat Spring.....per lb. 5 1/2c

HOSE, GARDEN.

Per ft.

Guaranteed 3 ply 1/2 inch.....16 c

" 4 ply 1/2 inch.....18 1/2c

" 5 ply 1/2 inch.....13 1/2c

COTTON COV. RUBBER HOSE.

High Grade Apache 1" guar. press.

400 .lb.....400

HUSKERS.

Boss.

Nos.....B E

Per doz.....New Nets

No. 39.....per doz. New Nets

IRON, PIG.

See Metals.—First column.

IRONS.

Curling.

C.....per doz. \$4 40

B....." 50

A....." 58

Princess....." 1 25

Thelma....." 1 25

Pinking....." 1 00

Plane.

Wood Bench.....Add 10% to list

Sad.

Charcoal.....per doz. \$11 00

Common, polished, per 100 lbs. 7 75

No. 70 Asbestos.....\$1 50 net

No. 100....." 1 75 net

Common, nickel plated.....8 25

Mrs. Pott's.

No. 50 J, Enterprise, per set, Nets

No. 55 J....." "

No. 50 T....." "

No. 55 T....." "

Tailors' Sad.....per lb. "

Tailors' Goose....." "

Ideal.

6 lb. Household.....\$3 50

9 lb. Dressmakers.....4 25

14 lb. Tailors' Goose.....5 50

Tuyere.

Single Duck Nest.....per doz. \$5 25

Double Duck Nest....." 6 25

Sutton.....each 2 60

JACKS.

Locomotive.....30%

Wagon.

Richard's No. 1.....per doz. \$15 50

Miller....." 20 00

Oliver.

Nos.....0 00

Each.....\$0 60 \$0 80

Standard.

Nos.....1 2

Each.....\$0 60 1 00

R-W.

Big Lift.....40%

Tiger.....40%

KETTLES.

Brass.....15%

Cauldron.....40&5%

Copper.....per lb. 27

Maslin.....40&10%

Sugar.....50%

KNIVES.

Beet Topping.

Clyde, 9-in. Scimitar Blade, dz. \$3 95

California.....3 40

Butcher.

Beechwood Handles, 6" blade...\$4 00

" 7" ".....4 65

" 8" ".....5 65

Cooper's Hoop.....15%

Corn.

Clipper.....per doz. \$1 75

Diston's....." 2 75

Earle's....." 3 00

Woodford....." 2 25

Drawing.

Standard.....(New List) 15%

Adjustable.....15%

Barton's Carpenters.....15%

Hay.

Iwan's Solid Socket.....doz.\$13 00

Heath's....." 13 00

Iwan's, Sickle Edge....." 15 00

Iwan's, Imp'd Serrated....." 15 50

Hedge.

Challenge.....per doz. \$6 00

Diston's....." 3 75

Mining.

Common, Single....." 60

Common, Double....." 90

Streeter, 4-blade....." 1 30

Streeter, 6-blade....." 2 00

Putty.

Common.....per doz. \$0 75 @ 1 50

Lander's....." 1 75 @ 2 50

Scraping.

Beech Handle.....90 @ 1 10

Lander's.....5 50 @ 6 50

KNOB.

Doors.

Mineral.....per doz. \$2 10

Porcelain....." 2 20

Jet....." 2 20

LADDERS.

Common Long.

Per ft.....17c @ 23c

Extension.

Per ft.....22 to 28

Step.

Common, per ft.....23c

Common, with Shelf, add 10c.

IXL.....34c

Challenge, 6 to 9 ft.....55c

10 to 16 ft.....60c

LANTERNS.

Bull's Eye Police.

3-in. Flash Light...per doz. \$13 00

LEADERS, CATTLE.

Nos.....51 52

Per doz.....\$1 35 1 45

LEATHER, LACE.

Rawhide 1/2".....100 ft. \$3 00

" 1/4"....." 4 40

LEATHERS, PUMP.

Valve and Plunger.....10%

LIFTERS.

Stone Cover.

Coppered.....per gro. \$3 25 @ 5 50

Alaska....." 8 00

Alaska....." 10 00

Transom.

Payson's.....55%

LINES.

Chalk.

Twisted in 20-ft. hanks.

Nos. 4 6 7 8 9

Gro.....Prices on Application

Twisted in 50-ft. balls.

Nos. 1 2 3 4

Per doz.....Prices on Application

Braided in 20-ft. hanks.

Nos. 0 1 2 3

Per doz.....Prices on Application

Mason's....."

Clothes.

60 ft. Jute.....per doz. \$0 93

60 ft. Sisal....." 40

50 ft. Cotton....." 15

50 ft. Braided Cotton.....25

BRICKS.

per crate, 24c

LOCKS.

Barn Door.

No. 60 Stearns.....per doz. \$10 00

No. 80 "....." 17 50

MACHINES.

Riveting.

Stearns No. 1.....per doz. \$12 00

Tenoning.

No. 50 Peace's Spoke...each \$11 50

MAIL BOXES.

See Boxes.

MALLETS.

Carpenters'.

Fibre Head, No. 2, per doz. \$16 50

" No. 3 ".....19 50

" No. 4 ".....28 50

Round Hickory.....\$3 00-5 00

" Lignumvitae.....6 25-10 50

Square Hickory.....3 50-5 50

" Lignumvitae.....8 00-12 00

Tinners'.

Hickory....." 2 25

MATS.

Door.

National Rigid.....50&10&5%

Acme Steel Flexible.....50%

Stone.

No. 2.....per gro. Nets

No. 1....." "

No. 1 Asbestos Toasters, or wire-covered Stove Mats, with handle.....per doz. 1 10

No. 2 Asbestos Toasters, with ring.....per doz. 60

MATTOCKS.

Plumba.....25%

MAULS.

Iron, lbs. 10 13 16 18

Per doz.....Prices on Application

Wood Face, lbs. 10 12 14

Per doz.....Prices on Application

Wood Choppers'.

Lake Super'r & Oregon Pat. 40&5%

MEASURES.

Galvanized, doz.....Nets

Japanned, doz.....Nets

MILLS, COFFEE.

Enterprise.....16 1/2%

Parker.....50&5%

Arcade.....40-10%

MITRE BOXES.

See Boxes.

MOPS.

Cotton. Star (Cut Ends).

Pounds 12' 15' 18' 24'-3 oz.

Per doz. \$4 50 5 65 6 75 9 00

MOWERS, LAWN.

Gladiator—B. B.

Inches.....16 18 20

Each.....\$6 50 7 25 8 00

King Universal—B. B.

Each.....\$5 25 5 75 6 00

Inches.....14 16 18

Big Giant.....\$3 50 3 90 4 25

NAILS.

Cut Steel.....Prices on Application

Cut Iron....." "

Wire.

Small Lots...Prices on Application

Cement Coated.

Small Lots....Prices on Application

Horseshoes.

Ausable.....55&5%

Capewell.....15%

Perfect.....55&5%

Putnam.....20&5%

Star.....30&5%

Picture.

Brass Heads.....25%

Brads.....50&5%

Furniture.....List plus 15%

NAIL PULLERS.

NAIL SETS.

See Sels.

NETTING, POULTRY.

Galvanized before weaving.....50%

Galvanized after weaving.....45%

NIPPERS.

End Cutting.

Stubbs' Pattern, Inches. 5 6

Per dozen.....\$4 65 6 75

End and Diagonal Cutting.

Swedish Side. Inches.. 5 6

Per dozen.....\$4 50 5 7

Hoof.

Heller's.....40&10%

V. & B.....55&5%

NOZZLES.

Hose.

Magie.....per doz. \$9 50

Diamond....." 5 75

NUTS, HOT PRESSED.

Square Tapped.

\$1.85 off per 100 lbs.

Hexagon Tapped.

\$1.85 off per 100 lbs.

OILERS

Chase Pattern.

Brass and Copper.....10%

Zinc.....33%

Engineers'.

Tin.....per doz. \$7 00 @ 9 00

Machine.

Common.....per doz. \$0 85

OPENERS.

See Box Chisels

Box.

Can.

Delmonico.....per doz. \$1 30

Never Slip....." 65

Crate.

V. & B....." 7 25-11 00

OUTFITS, COBBLING

Combination.....per doz.\$16 00

Economy....." 8 50

Family....." 14 50

PAILS.

Cream.

14-qt., without gauge, per doz. \$9 50

18-qt., " " " 11 00

20-qt., " " " 11 75

Sap.

10-qt., IC Tin.....per doz. \$4 00

12 "....." 3 50

Stock.

Galv'd. qts. 14 16 18 20

Per doz.....\$9 75 10 75 12 75 14 50

Water.

Galvanized, qts. 10 12 14

Per doz.....\$5 75 6 50 7 25

Wood.

Cable, 2-Hoop.....per doz. Nets

Cable, 3-Hoop....." Nets

Cedar, 3-Hoop, brass.. " Nets

PANS.

Dripping.....Net

Fry.

Common.....Nets

Acme....."

Roasting.

Paxton,

Nos. 1 2 3 4

Per doz.....Nets

Neverburn....."

Savory No. 200.....per doz. \$8 40

PAPER.

Building.

Plain.....per 100 lbs. \$2 1/2

Tarred....." 2 1/2

Tarred Felt....." 2 1/2

Red Rosin, per ton.....\$75 00

Sand and Emery.

No. 1, per ream, best grade.... \$3 40

No. 1, per ream, cheaper grade. 4 85

Wrapping.

Express.....100 lbs. Nets

| PARERS | FINNERS | PUNCHES. | SAWS. |
|--|---|--|---|
| Apple. | Hollow.....Net list | Conductors. | Band. |
| Goodell's.....per doz. \$10 80 | Solid.....each, 10c | No. 22.....per doz. \$3 00 | E. C. Atkins & Co. Prices on applic'n |
| Turntable....." 11 40 | | Machine.....per lb. 25 | Disston's.....Prices on applic'n |
| White Mountain....." 8 40 | | | Buck. |
| Reading, No. 78....." 11 40 | | Saddlers'. | Disston's.....Prices on applic'n |
| Potato. | | Common.....per doz. 1 50 to 5 00 | Jackson's.....New nets |
| Goodsell's Saratoga, 10 1/2 in., dz. 6 50 | PLUMBS AND LEVELS. | Revolving Spring. | Butchers'. |
| Goodsell's Saratoga, 5 in., dz. 5 50 | Common.....Nets | Stearns, No. 10.....per doz. \$ 6 25 | E. C. Atkins & Co. Prices on applic'n |
| | Cook's.....40% | " No. 40....." 12 00 | Disston's.....Prices on applic'n |
| PICKS. | Davis' Iron.....25% | " No. 60....." 16 00 | Circular. |
| Adze Eye Ore.....22 1/2% | Davis' Inclinator.....15% | | E. C. Atkins & Co. Prices on applic'n |
| Drifting and Poli Picks.....22 1/2% | POINTERS, SPOKE. | PUTTY. | Disston's.....Prices on applic'n |
| Plumbs, Railroad.....22 1/2% | Stearns' No. 1.....per doz. \$ 8 00 | Strictly pure.....per 100 lbs. \$4 25 | Hiles'.....New nets |
| Surface.....22 1/2% | " No. 2....." 10 00 | | Compass. |
| PINCERS. | POKERS, STOVE. | RAIL. | E. C. Atkins & Co. Prices on applic'n |
| Carpenters', cast steel. | Wrt Steel, str't or bent per doz. \$0 75 | Burn Door. | Disston's.....Prices on applic'n |
| Inches.... 6 8 10 12 | Nickel Plated, coil han'l's " 1 10 | Matchless, 1-in.....5c | Coping. |
| Per doz. \$3 75 4 75 6 25 7 00 | | Matchless, 1 1/2-in.....7c | E. C. Atkins & Co. Prices on applic'n |
| Blacksmiths'.....45% | POLISH. | Storm King.....5c | Disston's.....Prices on applic'n |
| Heller's.....40% | Metal. | Sliding Door. | Cross-Cut. |
| | Wizard, 6 oz.....per gross \$18 00 | Bronzed wrought iron...per ft. 8 1/2c | E. C. Atkins & Co. Prices on applic'n |
| PINS. | " 1 pt....." 20 40 | | Disston's.....Prices on applic'n |
| Common.....per box of 5 gro. \$0 95 | " 1 qt....." 36 00 | Garden. | Decorating. |
| Pickel. | " 1 gal....." 6 00 | Steel, Bow, 12-inch Teeth.....\$8 50 | Disston's.....Prices on applic'n |
| Fluted, 15-in.....per doz. \$1 10 | " 1 gal....." 10 80 | Steel, Bow, 14-inch....." 9 25 | Flooring. |
| Fluted, 21-in....." 1 60 | " 1 gal....." 18 60 | Malleable Iron, 12-in....." 4 75 | E. C. Atkins & Co. Prices on applic'n |
| Spiral....." 1 90 | | Malleable Iron, 14-in....." 5 00 | Disston's.....Prices on applic'n |
| PIPE. | Stove. | Hay. | Hand and Rip. |
| Plain Round and Round Corrugated. | Black Eagle, Paste 5 oz.....\$13 80 | Wood, 10 Teeth.....\$4 00 | E. C. Atkins & Co. Prices on applic'n |
| 29 Gauge.....65% | " " 1 lb.....17 40 | Lawn. | Disston's No. 7.....Prices on applic'n |
| 28 ".....55% | " " 1 lb.....31 20 | 20 Teeth.....per doz. \$5 50 | Disston's Nos. 8, D8, 12, 76, 112, |
| 26 ".....45% | " " 5 lbs. per case.....5 25 | | D100, and 120.....Prices on applic'n |
| 24 ".....20% | Black Eagle Liquid, 6 oz. per gross.....15 60 | RASPS—See Files. | Keystone.....New nets |
| Square Corrugated A and B and Octagon. | Black Kid Paste, 5 lbs. per case 6 00 | RAZORS—SAFETY. | Keyhole. |
| 29 Gauge.....50% | Black Jack Liquid 1/2 pt. per gross.....15 60 | Gillette.....per doz. \$45 00 | E. C. Atkins & Co. Prices on applic'n |
| 28 ".....45% | Black Jack Paste #10 per gross 13 20 | Auto Strip.....45 00 | Disston's.....Prices on applic'n |
| 26 ".....35% | | Gem.....8 40 | Miller Box. |
| 24 ".....15% | | Gem (3 doz. lots).....8 40 | E. C. Atkins & Co. Prices on applic'n |
| Galvanized Toncan Metal, Genuine O. H. Iron, Lyonore Metal, Charcoal Iron and Keystone C. B. | | Ever Ready (3 doz. lots).....8 00 | Disston's.....Prices on applic'n |
| Plain Round and Round Corrugated. | FIRE POTS. | RAZOR STROPS. | Patternmakers'. |
| 28 Gauge.....50% | Clayton & Lambert's, each \$4 00@6 00 | Star (Honing).....50% | E. C. Atkins & Co. Prices on applic'n |
| 26 ".....40% | Gate City.....each, 6 25 | | Disston's.....Prices on applic'n |
| 24 ".....15% | Gem.....each, \$6 75@8 50 | REGISTERS. | Pruning. |
| Square Corrugated A and B Polygon and Octagon. | | Cast Iron.....10% | Disston's.....Prices on applic'n |
| 28 Gauge.....45% | POWDER. | Steel and Semi-Steel.....20% | Stairbuilders'. |
| 26 ".....35% | See Ammunition. | Solid Brass or Bronze Metal prices on application. | E. C. Atkins & Co. Prices on applic'n |
| 24 ".....15% | | Baseboard.....20% | Disston's.....Prices on applic'n |
| 14 and 16 oz. Copper, all designs..20% | PRESSES, FRUIT AND JELLY. | REGISTER FACES. | Wood. |
| Portico Elbows. | Enterprise Manufacturing Co....25% | Jepanned, Bronzed and Plated. | E. C. Atkins & Co. Prices on applic'n |
| Galvanized and Terne Steel. | | 4x6 to 14x14.....20% | Disston's.....Prices on applic'n |
| 1-inch.....45% | PRIMERS. | 14x14 to 38x42.....40% | |
| 1 1/2-inch.....45% | See Ammunition. | | SAW BUCKS—See Bucks. |
| 1-inch.....45% | PRUNERS. | REVOLVERS. | SAW SETS—See Sets. |
| 2-inch.....45% | Diston's Pole.....per doz. \$18 00 | Iver Johnson Safety Automatic Hammer.....New Nets | SAW TOOLS—See Tools. |
| Tubing.....40% | Water's Improved....." 60% | Hammerless....." | SAW FRAMES. |
| Discounts on Round apply on sizes 2 inch to 6 inch inclusive. | | L. J. Model 1900....." | Common, plain.....per doz. \$1 50 |
| Freight allowed on 15 dozen or more Less than 15 dozen F. O. B. Factory Terms: 30 days net, 2% ten days. | PULLERS. | RINGS AND RINGERS. | Common painted....." 2 10 |
| Standard Gauge Conductor Pipe, plain or corrugated. | Cork. | Bull. | SCALES. |
| Not Nested.....45-50% | Daisy.....each, \$3 10 | Copper.....2 1/2-in. 3-in. | Counter. |
| Nested solid.....50% off | Phoenix....." 1 40 | Per doz.....\$2 75 \$3 25 | Pelouze.....40&10% |
| Steel. | Quick and Easy....." 2 70 | Rea's Improved Self-Piercing copper, doz. 3 40 | SCISSORS. |
| 29-Gauge, 3-inch.....\$16 00 | Nail. | Steel, per doz.....1 50 1 80 | Star.....60% |
| " 4-inch.....16 50 | Giant.....per doz. 14 50 | Hog. | SCOOPS. |
| " 5-inch.....17 25 | Never-Slip....." 17 00 | Blair's Rings.....per doz. \$ 75 | Grain. |
| " 6-inch.....18 00 | | Blair's Ringers....." 1 00 | 1 bu. "Hercules".....per doz. 3 70 |
| " 7-inch.....20 00 | PULLEYS. | Brown's Rings....." 1 00 | 1 bu. "Hercules"....." 5 00 |
| T-Joint Made-up. | Awning—Jap'd.....10% | Hill's Ringers....." 72 | SCRAPERS. |
| 6-inch.....per 100 \$50 00 | Clothes Line.....10% | Hill's Ring, boxes....." 60 | Box. |
| Furnace Pipe. | Hay Fork. | Major Rings....." 1 50 | Triangular, No. 6.....per doz. \$6 25 |
| Double Wall Pipe and Fittings 25% | Iron Wheel, 5-in.....per doz. 2 50 | Perfect Rings....." 1 50 | ROAD. |
| Single Wall Pipe, Round Pipe | Wood Wheel, 6-in....." 2 65 | Wolverine Rings....." 1 65 | Cubic ft. 7 5 3 |
| Fittings.....25% | Wood Wheel, 6-in., pass knot,.....per doz. 3 00 | Wolverine Ringers....." 1 10 | With runners, ea. \$7 00 6 50 6 20 |
| Galvan'd and Black Iron Pipe, | Sash. | RIVETS. | SCREEN DOOR HINGES. |
| Shoes, etc.....20% | Common.....Net | Copper Belt.....Add 15% to list | Cast iron.....gross, \$13 00 |
| PLANES. | Common-Sense, 2-in.....Net | Coppered Iron.....30% | Steel....." 9 50 |
| Stanley Iron Bench.....net | Empire Pattern, 2-in.....Net | Tinners'.....per lb. \$0 17 | SCREWS. |
| PLATES, TIN. | Ideal.....Net | Slotted Clinch.....per doz. 60c@1 10 | Bench. |
| See Metals in Column 1. | Steel.....Net | Tubular. | Iron, ins. 1 1 1/2 1 3/4 1 1/2 |
| PLIERS. | PUMPS. | Nos. 1 and 2 assorted sizes, 50 in box.....doz. 75c | \$9 75 11 50 13 75 21 50 |
| Giesl, Button's—Nets | Pitcher Spout. | Nos. 1 and 2 assorted sizes, 10 in box.....doz. 1 40 | Wood, white maple.....per doz. 6 00 |
| Cutting. | Nos. 1 2 3 4 | RIVET SETS. | Hand—Wood.....22 1/2% |
| Bernard's.....New Prices | Each.....Nets | See Sets. | Hand Rail.....22 1/2% |
| Lodi.....New Prices | Spray. | Cotton. | Jack.....33 1/2% |
| Paragon.....New Prices | Midget Junior.....per doz. 3 75 | 1, 5-16 in. Com. on reels, per lb.....85c | Lag or Coach—all sizes, gimlet pointed.....45-50% |
| Fencing. | New Misty....." 6 00 | 1, 5-16 in. Com. in coils.....85c | Saw—Centennial. |
| Black Bull.....All Nets | Crescent....." 6 50 | Sisal | Nos. 1 2 3 4 |
| Farmers' Choice.....All Nets | | 1st Quality.....20c | Per doz.....47c 55c 75c 90c |
| Russell's.....All Nets | | No. 2.....17 1/2c | Wood. |
| Flat and Round Noss. | | Pure Manila. | F. H. Bright.....70-10-10% |
| Bernard's.....New Prices | | 1st quality, base.....per lb. 25 1/2c | R. H. Blued.....65-10-10% |
| Lodi.....New Prices | | Hardware Grade.....per lb. 24 1/2c | F. H. Jap'd.....62 1/2-10% |
| Paragon.....New Prices | | RULES. | F. H. Brass.....42 1/2-10-5% |
| | | Prices on application | R. H. Brass.....40-10-5% |
| | | Lufkin's Hickory Board....." | R. H. Nickel Plated.....57 1/2-10% |
| | | Lufkin's Log....." | SCYTHES. |
| | | Lufkin's Boxwood....." | Clipper, Grass.....per doz. \$13 50 |
| | | Lufkin's Zigzag....." | Honest Dutchman....." 13 70 |

| | | | | | | | |
|--------------------------------------|--|--|--|-------------------------------------|--|---|--|
| SETS. | | SQUARES. | | TAPES, MEASURING. | | WARE. | |
| Nail. | | Steel and Iron. | | Asses' Skin. | | Glass Pots. | |
| Square head..... per doz. \$1 25 | | Nets new list | | Lufkin's Steel..... | | Tinned..... Add 15% to list | |
| Cup point, knurled.. " 1 15 | | (Add, for bluing, \$3.00 per doz., net.) | | Lufkin's Metallic..... | | Enameled..... 30% | |
| Rivet. | | Mitre. | | Lufkin's Pocket..... | | Prices on applic'n | |
| Farmers'..... per doz. \$2 10 | | Try and Bevel..... | | THERMOMETERS. | | WASH BOARDS—See Boards. | |
| Tinners'..... 25% | | Try and Miter..... | | Tin Case..... per doz. 80c@ \$ 1 25 | | WASHERS. | |
| Saw. | | Fox's..... per doz. \$6 00 | | Wood Back..... " \$2 00@ 12 00 | | Standard O. G. cast iron... per lb. 3½c | |
| Aiken's Pattern..... per doz. \$6 50 | | Winterbottom's..... 10% | | Glass..... " 12 00 | | Wrought steel in 5-lb. boxes, per lb.: | |
| Disston's Monarch... " 7 20 | | SQUEEZERS, LEMON. | | TIES. | | In. 3/16 1/2 5/16 1/4 1/8 1/16 1/32 1/64 1/128 1/256 1/512 1/1024 1/2048 1/4096 1/8192 1/16384 1/32768 1/65536 1/131072 1/262144 1/524288 1/1048576 1/2097152 1/4194304 1/8388608 1/16777216 1/33554432 1/67108864 1/134217728 1/268435456 1/536870912 1/1073741824 1/2147483648 1/4294967296 1/8589934592 1/17179869184 1/34359738368 1/68719476736 1/137438953472 1/274877906944 1/549755813888 1/1099511627776 1/2199023255552 1/4398046511104 1/8796093022208 1/17592186044416 1/35184372088832 1/70368744177664 1/140737488355328 1/281474976710656 1/562949953421312 1/1125899906842624 1/2251799813685248 1/4503599627370496 1/9007199254740992 1/18014398509481984 1/36028797018963968 1/72057594037927936 1/144115188075855872 1/288230376151711744 1/576460752303423488 1/1152921504606846976 1/2305843009213693952 1/4611686018427387904 1/9223372036854775808 1/18446744073709551616 1/36893488147419103232 1/73786976294838206464 1/147573952589676412928 1/295147905179352825856 1/590295810358705651712 1/1180591620717411303424 1/2361183241434822606848 1/4722366482869645213696 1/9444732965739290427392 1/18889465931478580854784 1/37778931862957161709568 1/75557863725914323419136 1/151115727451828646838272 1/302231454903657293676544 1/604462909807314587353088 1/1208925819614629174706176 1/2417851639229258349412352 1/4835703278458516698824704 1/9671406556917033397649408 1/19342813113834066795298816 1/38685626227668133590597632 1/77371252455336267181195264 1/154742504910672534362390528 1/309485009821345068724781056 1/618970019642690137449562112 1/1237940039285380274899124224 1/2475880078570760549798248448 1/4951760157141521099596496896 1/9903520314283042199192993792 1/19807040628566084398385987584 1/39614081257132168796771975168 1/79228162514264337593543950336 1/158456325028528675187087900672 1/316912650057057350374175801344 1/633825300114114700748351602688 1/1267650600228229401496703205376 1/2535301200456458802993406410752 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